

American Artisan and Hardware Record

Sheet Metal Work-Warm Air Heating

Vol. 25, No. 4

CHICAGO, JANUARY 28, 1928

\$2.00 Per Year

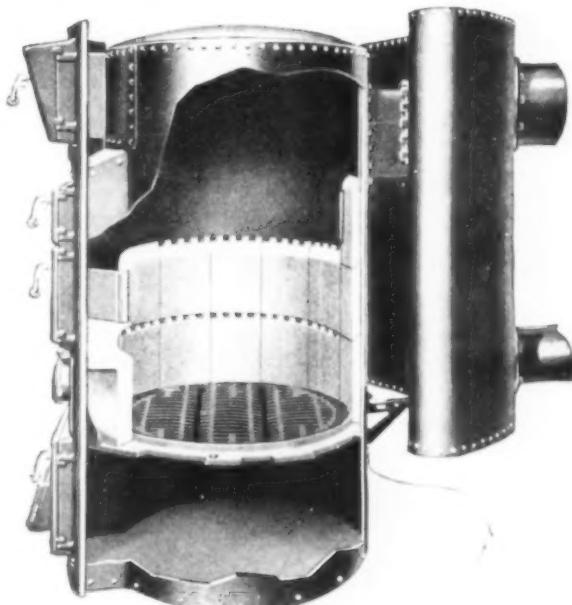
LAND MORE JOBS IN 1928 WITH THIS POPULAR HEATER

SALES on SUCCESS Heaters last year showed a big gain over the sales of any preceding year. And as we enter 1928, prospects for SUCCESS Heater sales look even more promising.

This increasing popularity is not at all surprising. Ask the dealer who sells SUCCESS Heaters and he will tell you that this heater is superior to other makes in construction of fundamental features and in design. Ask the user and he will say that the SUCCESS furnishes his home with clean, healthful and adequate heat at low cost.

The SUCCESS Heater line is just what you need to get your full share of the heater business in 1928. The line is unusually complete, with a size and model for every purpose, enabling you to go after more jobs. Write us today for more information about this line and for details about the SUCCESS Heater plan for helping dealers get more business in their communities.

SUCCESS HEATER MFG. CO.
DES MOINES, IOWA



Cut-out View of SERVICE Heater

Notice the following features in the cut-out view of the Standard Service Heater:

1. The grates, the method of placing the crowned surfaces and the heavy grate rings to which they are attached.
2. The heavy connecting collar and the bracket supporting the radiator.
3. Cupola brick fire pot with the opening at the top of each row of bricks for admission of preheated air to mix with the gases at the point of combustion.
4. Note particularly the heavy, durable appearance of the heater throughout.

[The SUCCESS Standard Service Heater is made of ARMCO Iron. It is the best heating material available.]

SUCCESS HEATER
BUILT LIKE A BOILER RIVETED SMOKE-TIGHT



Announcing~

The
1928
ROYAL Furnace

New Features - New Colors

"IT'S BETTER - IT'S DIFFERENT - IT'S A ROYAL"

The 1928 ROYAL embodies improvements of appearance and operation

THE waist-high grate shaker handle—sturdy and durable—is precisely balanced to give easiest operation of the grates. Improved grates of the rocking, clinker-crushing type permit the use of any grade of fuel.

Every ROYAL is handsomely finished in gold-brown and gold—every one fit for the show window. Their appearance appeals to the builder, realtor and home owner, and presents a beneficial selling advantage for you.

The streamline design of the one piece cast radiator presents the largest amount of effective heating surface. It offers least resistance to the upward travel of warm air.

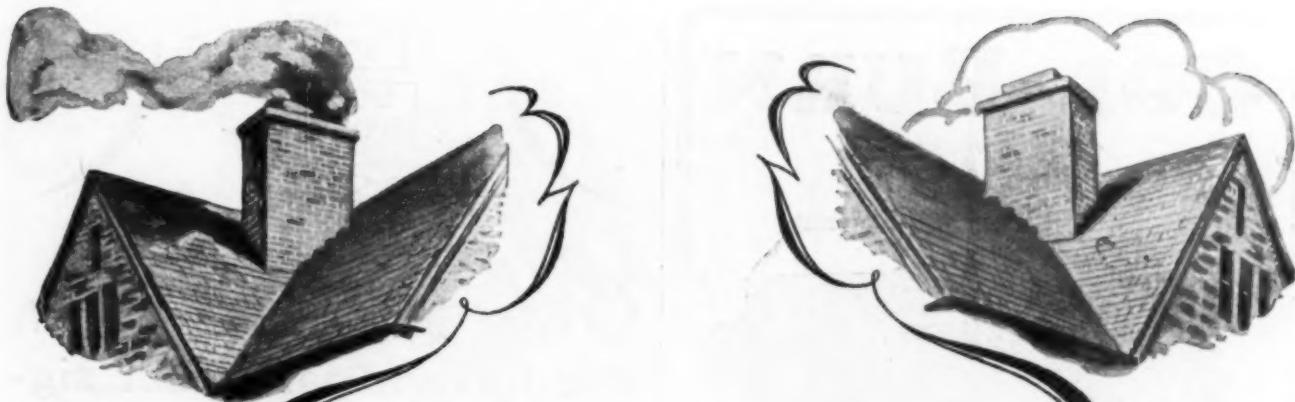
The one piece feed section is unusually large, affording the space positively necessary for oxidizing the hot gases to secure complete combustion and fuel economy.

The slip-on panel fronts lock quickly and easily into place without cement or bolts. They positively prevent gas or dust leakage to the furnace air chamber.

The 1928 ROYAL Dealers' proposition is attractive and means more profit for you through reduced selling resistance. Write for it, as well as for our catalog.

HART & CROUSE Co.
 UTICA, N. Y.





This to This

and here's the reason: The Carburetor, placed between the combustion dome and the radiator mixes heated air with the unburned gases and *burns the smoke*.

CAN you conceive of thick, black clouds of smoke quickly changing to a thin, gray haze and then vanishing?

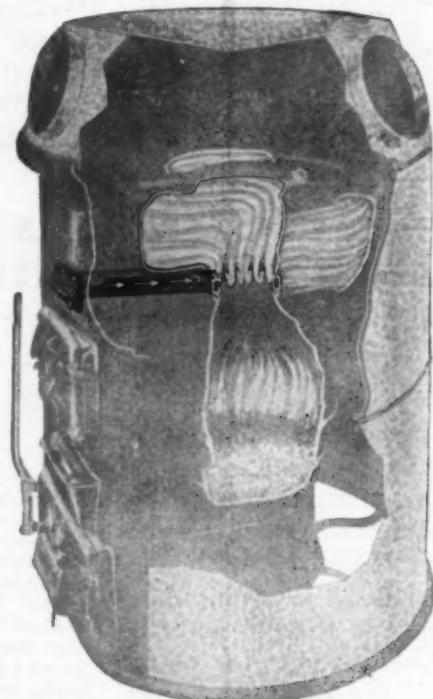
You don't have to imagine it. You can *see* it done. You can do it yourself!

Fire a SUPERIOR SUPER-SMOKELESS Warm Air Furnace with the cheaper grades of soft coal until the black smoke belches forth from the chimney. Then open the Carburetor door. In an inconceivably short time the chimney clears and you can *see* the smoke being burned by the *secondary combustion*—apparently the impossible!

If you can sell furnaces, you can sell *more* of these, with ample profit on every sale.

The SUPERIOR SUPER-SMOKELESS Furnace lends itself so well to an actual, *visual* demonstration of its remarkable gas-and-carbon-burning principle with either soft or hard coal that many sales result. Write for full particulars—how you can make money from our Sales Demonstration Plan.

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Richardson & Boynton Company
Successor to Furnace Department
UTICA HEATER COMPANY
UTICA, N. Y.
New York Office: 260 Fifth Ave.
Chicago Office: 3639-45 S. Ashland Ave.
Makers of Superior Pipe and New Idea Pipeless Furnaces.

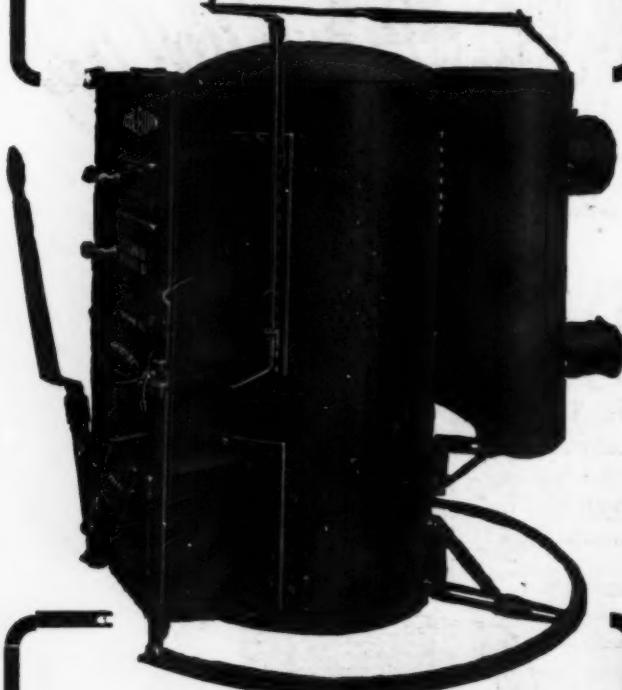


SUPERIOR SUPER-SMOKELESS WARM AIR FURNACE

SUPERIOR DEALERS ARE EXCEPTIONALLY LOYAL — WHY?

Published Weekly by American Artisan and Hardware Record, Inc., 620 South Michigan Avenue, Chicago, Illinois.
Entered as Second Class Matter June 25, 1887, at the Post Office at Chicago, Illinois, under act of March 3, 1879.

COL-BURN HEATER



The Popular Furnace that Sells—Sells—Sells with Multiplied Profits

Attractively priced

Saves 20% to 30% of coal
costs

Burns any kind of coal

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Requires minimum attention

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soot, gas and oil tight

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more Col-Burns. Ask us for
copies of the letters Col-Burn
users write to us.

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Policy is of
the utmost
importance
to every
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ever has
sold, or who
ever expects
to sell a fur-
nace. Write
for details
today.

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Address _____



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large dealers interested in
quality-quantity



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outstanding furnace value on the market.

The *Agricola* is the product of the latest and
most scientific furnace designing.

Write for full details today.

***Agricola* Furnace Company**
GADSDEN, ALABAMA



**1928 will be a
Prosperous Year for
TORRID ZONE Dealers**

THE TORRID ZONE for 1928 is the last word in steel furnace construction. Like every worthy product it will be imitated and dealers will be found to sell the imitations. But in spite of all competition, more TORRID ZONE dealers are going to sell more TORRID ZONE furnaces in 1928 than ever before, and with a better average profit per sale. To this day no other gas-tight furnace has been produced with all the superior features of construction and operation that are standard on the TORRID ZONE.

The 1928 TORRID ZONE furnaces can be distinguished by their bright aluminum fronts and black raised lettering. The aluminum paint used, is fire and moisture proof and will stay bright for many years. You can take a TORRID ZONE furnace "right out of

stock" and place it in the finest window or interior display without additional expense or labor to improve its appearance. Wherever it is shown the new TORRID ZONE will attract favorable attention and we all know that attention is the first step in any selling campaign.

When your customer has thoroughly examined the gas-tight, riveted steel construction, the brick lined fire pot, the water evaporating pan, and the Ten Year Guaranty—and when he realizes the necessity of an air blast carburetor, long smoke travel and large heating surfaces, you will be amazed at the little additional effort necessary to close a TORRID ZONE sale. A TORRID ZONE properly installed never fails to give satisfaction and the profits that you can make on TORRID ZONE furnaces alone are worthy of your consideration.

New literature describing the 1928 TORRID ZONE in detail has just arrived from the printer and we will be glad to send you this information promptly upon request.

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2. Riveted gas tight. (Guaranteed).
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4. Heavy locomotive type grates.
5. Patented bracket for radiator support.
6. Improved smoke consumer.
7. Enclosed grate bar ends.
8. Doors ground to fit with Locktite handles.
9. Fire Brick—specially designed and tested.
10. The practical oil burning furnace.

These ten features make the "AFCO" easier to sell and they keep it sold. You can do a bigger and better business and make more money with the "AFCO" Line. Send for our new catalogue, which gives detailed information.

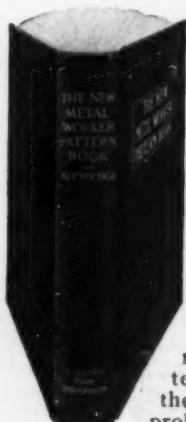


The "AFCO" Crescent shown here is only one of our three models of Boiler Plate Furnaces.

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"AFCO" is the new trade marked Name for Our American Furnace



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The NEW METAL WORKER PATTERN BOOK

A Complete and Systematic Course of Instruction in Pattern Cutting as Applied to All Branches of Sheet Metal Work

By Geo. W. Kittredge and Associates

NEW REVISED EDITION Including Some New Problems by FRANK X. MORIO

9 x 11 Inches 528 Pages Substantially Bound in Cloth 895 Illustrations Price, \$6 Postpaid

Indispensable as a Work of Reference for the Foreman and Mechanic

THIS work is the standard reference on all phases of pattern drafting and is recognized as the most practical and thorough text book on modern methods of developing and cutting patterns for sheet metal work. It covers the principles underlying practically every problem that is likely to come up in daily practice. Beginning with the selection and use of drawing tools, the author explains linear and geometrical drawing so clearly that one who has had no previous knowledge of arithmetic or drawing may understand these essentials and apply them. The most approved methods of pattern cutting are also given in the course of the work. As the book progresses the problems gradually become more advanced until the theory of triangulation is fully treated with many practical examples.

This volume does not presume upon any previous technical knowledge on the part of the beginner but aims to place before him all that is necessary to a thorough

understanding of the work performed in the last chapter—the practical problems which constitute the bulk of the book. No better text book for home study has ever been published.

The secret of success in sheet metal pattern cutting is in knowing how to apply the principles of geometry to your problems. Upon these underlying principles this book is written and ever since its publication it has been considered the standard authority on sheet metal pattern cutting and many affectionately term it "The Bible of the Trade."

This new edition has been carefully revised in order to keep it up to date and abreast of modern times and it will prove an infallible guide to everyone interested in sheet metal pattern drafting. Besides being a systematic treatise on pattern cutting it is also valuable as a reference book of pattern problems to be drawn from at convenience.

A glance at the list of chapter and section headings will give a clear idea of the scope and arrangement of the book. Enclosed find check (or money order) for \$6.00. Send me THE NEW METAL PATTERN BOOK.

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Chicago, Ill.

Name
Town State

A Monumental Work—No Shop Is Complete Without It

AMERICAN ARTISAN

620 South Michigan Avenue

Chicago, Illinois

January 9, 1928

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I have one of your cast iron furnaces which has been in use since 1888 and is good yet all excepting the water pan which is rusty and I wish you would send me a new water pan.

Yours truly,
(Signed) Charles D. Eliot,
317 Third Avenue North,
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We invite any manufacturer of furnaces to show a better record.

**The HESS-SNYDER COMPANY
MASSILLON, OHIO**

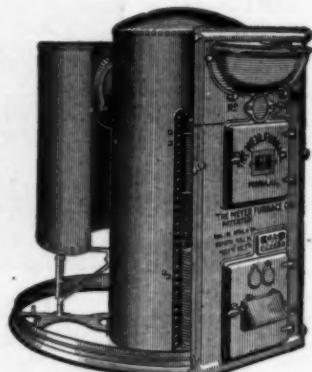
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**"COMPLETE SERVICE"
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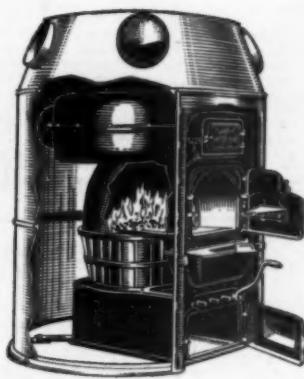
Hundreds of dealers now know this to be a fact

NO longer is it necessary for them to look to other sources for any part of their furnace or supply needs.

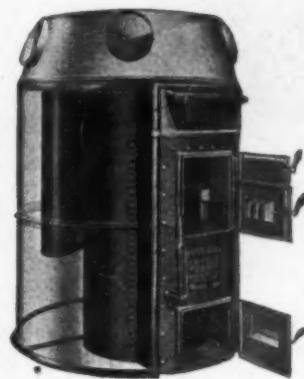
1928 finds our facilities greatly improved and even better service may be expected by our friends who already know that "Standard Service" is Different and Better.



Weir Steel Furnace



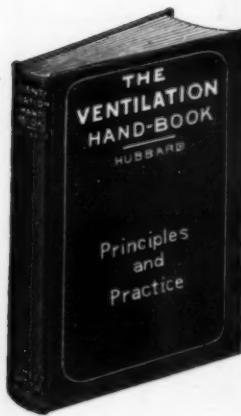
Nesbit Cast Iron Furnace



Stan-Co Steel Furnace

STANDARD FURNACE & SUPPLY COMPANY
Manufacturers and Distributors
OMAHA, NEBRASKA

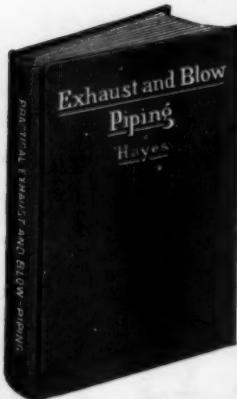
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THE VENTILATION HANDBOOK A PRACTICAL book designed to cover the principles and practice of ventilation as applied to furnace heating; ducts, flues and dampers for gravity heating; fans and fan work for ventilation and hot blast heating by means of a comprehensive series of questions, answers and very plain descriptions easy to understand. By Charles L. Hubbard. **Price.....\$2.00**

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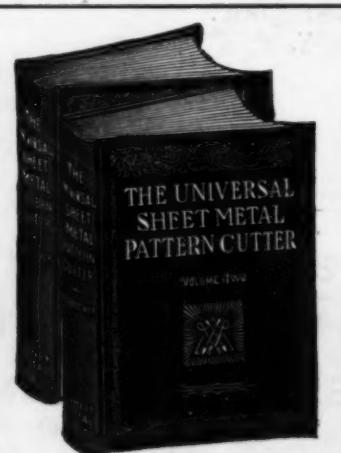
ESTIMATING SHEET METAL WORK

A NOTHER good book by Wm. Neu becker and A. Hopp. This is a new edition. A manual of practical self-instruction in the art of pattern drafting and construction work in light and heavy gauge metal, including skylights and roofing, cornice work, etc. 417 pages; 4 1/2 x 7 in.; 215 figures. **Price.....\$3.00**

Books Wanted

THE NEW METAL WORKER PATTERN BOOK

IT contains solutions of individual pattern problems in every department of sheet metal work, giving the complete methods of laying out all forms of work. It covers every detail from the selection of tools, through Linear and Geometrical Drawing, to development of Difficult Problems by Triangulation. This revised edition contains a series of automobile patterns. These include laying out guards, fenders, cowls, skirts, hoods, etc. It has 514 pages, 895 illustrations and diagrams, measures 9 x 12 inches and is cloth bound. **Price.....\$6.00**



Every Sheet Metal worker should own this 2 Volume Encyclopedia of Sheet Metal Working

THE most practical and useful treatise on the subject.

Work of all the branches of the trade and the broadest scope of details are found—inside and outside work—small jobs and the most complicated are shown, explained and profusely illustrated.

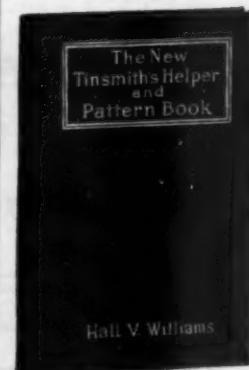
The first volume deals with all types and kinds of inside small and large sheet metal work.

The second volume deals with the more advanced branches of sheet metal work, in fact is largely devoted to the architectural end of the business. It consists of 400 double column pages and is illustrated with 711 engravings showing all methods under treatment, as well as perspective views of the subjects of the patterns, and other demonstrations in their finished state. It includes drawing, full sized detailing and lettering, development and construction of all forms of sheet metal construction work.

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regular cutting. Bound in leatherette; 500 pages; more than 400 pen drawings and illustrations. **Price.....\$2.00**

THE NEW TINSMITH'S HELPER AND PATTERN BOOK

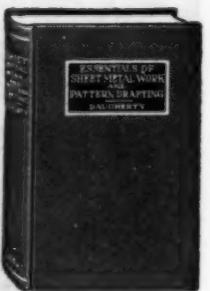


A NEW edition of one of the most popular books on tin-smithing and elementary sheet metal work. The contents of this new edition are new excepting the chapter on Mensuration, which has been re-arranged and amplified, and possibly some fifty pages of problems and tables which are classified to the phases of the work they

cover. This book covers simple geometry and every phase of modern pattern cutting, from the making of every type of Seam, Lap and Joint, to Conical Problems and Tinware, Elbows, Piping, Ducts, Gutters, Leaders, Cornice and Skylight Work and Furnace Fittings, 352 pages, 247 figures and 165 tables, flexible leather bound and measures 4 1/2 x 6 inches. **Price.....\$3.00**

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A BOOK produced by the combined efforts of L. Broemel and the late Professor J. S. Daugherty, Instructor in Sheet Metal Work at the Carnegie Institute of Technology. Pattern drafting is its biggest feature; not only tells how to make the pattern, but how to develop it with modern machines and tools; gives valuable assistance on soldering, brazing, welding, crimping, beading, straight, circular and ir-



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Sell
and
Install



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the
Plans

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FAN BLAST**

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You don't have to know how to engineer the job or draw the plans—WE DO THAT and guarantee the job.

Our proposition is only for Large Churches, Dance Halls, Schools, large Residences, etc. that ordinarily you would let the steam or hot water man have.

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Better
Warm Air Heating
and
Sheet Metal Work

American Artisan
and Hardware Record

Sheet Metal Work-Warm Air Heating

Published EVERY SATURDAY at 620 South Michigan Avenue, Chicago

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FLEETING FORTUNE

"The advice of Noor ad Deen Ali to his son in Arabian Nights.
 "Oppress no one, lest Fortune oppress thee, for the fortune of this world is
 one day for thee and another against thee, and its goods are but a loan to be repaid.
 Be merciful to all, as thou on mercy reckonest; for no hand is there but the hand
 of God is over it, and no oppressor but shall be worse than the oppressed. Keep
 therefore thy wealth, that it may keep thee, and watch over it, that it may watch
 over thee. Squander not thy substance, or thou wilt come to need."

"When a rich man grows poor, his lustre dies away, like to the setting sun that
 pales with ended day. Absent, his name is not remembered among men; present,
 he hath no part in life and its array. He passes through the streets and fain would
 hide his head and pour out floods of tears in every desert way. By Allah, when
 distress and want descend on men, but strangers midst their kin and countrymen
 are they."

—From *Ingot Iron Shop News*.

The largest makers of Heating-equipment in the world Announce

The new

SUNBEAM

WARM-AIR FURNACES

1000 Series

An entirely new furnace line—new from the one-piece base to the one-piece radiator! New feed section and ash pit that extend outside of front panels! Greater heating capacity! Greater strength! Easier, speedier installations—these are some of the advantages that the New Sunbeam Warm-Air Furnaces, 1000 Series, offer heating dealers, everywhere.

After a lengthy period of testing and experimenting and a study of present-day heating requirements, the immense resources of the largest makers of heating equipment in the world

were drawn on to develop a new heating plant in which is incorporated practically every feature that will help you obtain the bulk of the heating business in your locality.

Decide today, to learn more about the new Sunbeam Furnaces. Send for the new 40-page Catalog and Heating Manual which illustrates and describes the complete Sunbeam Furnace line—and which has page after page of installation suggestions, heating data and additional information to which you will refer whenever laying out an installation. Return the coupon below.

OUTSTANDING FEATURES

- 1 Massive Radiator, Clean-out and Smoke Collar cast in one piece.
- 2 Feed Section extends outside of front of furnace.
- 3 Ash Pit extends outside of front of furnace.
- 4 More than 20 feet of joint within warm air chamber have been eliminated.
- 5 Two types of grates—Boiler or Flat—are available.
- 6 Easy-to-operate, upright shaking lever.



PERFECTLY CENTERED

Draw a straight line through the center of the one-piece base and radiator and it will pass through the center of fire pots and combustion chamber.

- 7 All joints are deep, clean-cut cup joints.
- 8 Doors and door openings are machine-ground in special jig to insure air tight fit and absolute control of fire.
- 9 Heating unit is centered.
- 10 One-piece base with high casing flange reduces installation time and costs.
- 11 All castings are machine-molded. Are extra-heavy; uniform in thickness and strength.



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COMPANY
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City and State.....

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Fox
Furnace
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M a k e r s
o f
H e a t i n g
E q u i p m e n t
i n t h e
W o r l d**



**"I go after
big jobs like these
and get them"**



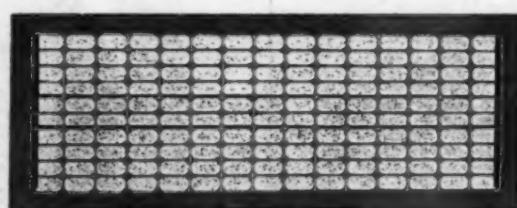
"NOT long ago the more pretentious homes were considered the rightful prospects for only steam or hot water heating. But since hot air became Recirculating Warm Air, with the advantages of plenty of warm air, fresh and moist, circulating throughout the house, I just naturally *have* to boost this type of heating. And, believe me, I get the orders!"

You, too, should be closing these worthwhile prospects for warm air heating. H. & C. Registers and Cold Air Faces, with their many points of advantage, will make your story on Recirculating Systems, with *their* marked advantages, ring with sincerity.

**No. 255—
COLD AIR FACE**

Fully 25% more efficient than same size wood face.

Comes in oak, black japan and oxidized copper.



No. 255—Cold Air Face

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**WROUGHT
STEEL**



**WARM AIR
REGISTERS**

"The Air Capacity Line"

Mention AMERICAN ARTISAN in your reply—Thank you!



Indiana Sheet Metal Men Step to Fore With Consolidated Organization

New Life Injected Into Body and Prospects Are Bright

THE Indiana Sheet Metal Contractors' Association and the Indiana Warm Air Heating and Ventilating Association will henceforth work in harmony and accord. The complete merger of these two organizations was completed at the opening of the annual convention of the two organizations held in the Denison Hotel, Indianapolis, January 24 to 26, 1928.

The consolidation proceedings were effected after a two-year struggle on the part of the two associations to find some equitable basis upon which the plan could be worked out. Officials feel that now there will be built in the state of Indiana a strong organization working for the betterment of the sheet metal and warm air heating industries. Under the new plan duplication of effort and expense will be entirely eliminated.

Minutes of the Meeting of the Consolidation Committee Sheet Metal Contractors' Association of Indiana, Incorporated, and the Indiana Warm Air Heating and Ventilating Association

There were present for the Sheet Metal Contractors' Association of Indiana, O. Vorhees, Joseph Mattingly, with President Waters ex-officio, President Beaman and Guy Voorhees for the Indiana Warm Air Heating and Ventilating Association, and Paul R. Jordan, executive secretary for both organizations.

President Beaman read the pro-

posed new by-laws section by section, and with revisions and additions, they were approved as follows:

By-Laws, Sheet Metal and Warm Air Heating Contractors' Association of Indiana, Inc.

ARTICLE I

Section 1. The name of this association shall be the Sheet Metal



**William S. Waters
Re-elected President**

and Warm Air Heating Contractors' Association of Indiana.

ARTICLE II

The particular objects for which this association is formed are as follows:

Section 1. To promote and encourage greater co-operation between employers and employes by aiding and encouraging more

friendly relationship between the members of this association or employes and other organizations undertaking to bring back into this industry the humane and personal feeling between the employers and employes that should properly exist.

Section 2. To promote the general welfare of its members by the collection and distribution of reliable and useful information to its membership, thus affording the means for intelligent consideration and action in matters pertaining to the industry; to facilitate the purchase and handling of materials necessary; to provide the best and most satisfactory methods for handling and execution of contract.

Section 3. To promote and encourage efficiency in the sheet metal and warm air heating industry; to generally encourage and aid in the education of apprentices in the trade; to generally encourage more liberal use of sheet metal in construction and warm air heating.

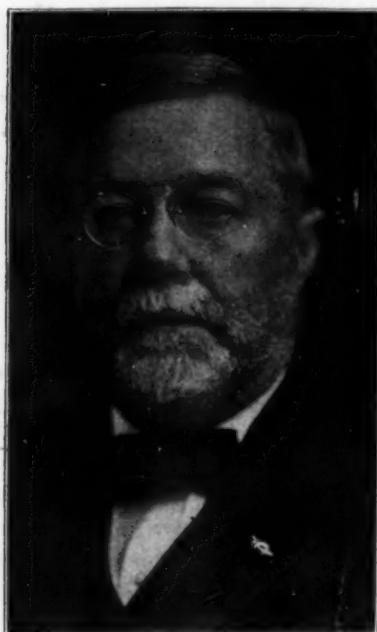
Section 4. To promote and encourage the principles of justice and equity in all dealings between employers, employes, co-employers and co-employes, architects, engineers, material dealers, the general public and all others.

Section 5. To promote, encourage and advocate needful and helpful legislation for the industry and for the general good of all those engaged therein.

Section 6. To counsel, advise, encourage and secure honorable dealings in the performance and execution of contracts with the pub-

lic, with each other, with employes, and others engaged in the building business.

Section 7. To promote and encourage the formulation and adop-



Joseph Gardner
Director

tion of such trade customs of business as will be just, equitable and honorable between man and man.

Section 8. To in every way, manner and form promote and encourage the best interests of this association by the establishment of a strong and sympathetic bond of friendship among the membership thereof, thereby securing unity of action and effort in the accomplishment of a common purpose.

Section 9. To assist in the uplift and elevation of the standard of our trade, and to encourage our membership and those employed of a better standard of life and living.

Section 10. To coöperate in every honorable and legal way with the associations and organizations in allied and kindred lines and with individuals, firms and corporations in different lines of business for the general good of the industry.

Section 11. To secure and aid in the correction and reformation of any wrongs pertaining to and effecting the general interest of the building industry.

Section 12. To encourage the obeyance of the spirit, intent and letter of all laws and ordinances made by our federal, state and municipal government for the regulation, control and conduct of building operations, and that no action shall be taken by this association or the membership hereof which, in any form or manner, would or might be construed as a participation in, or encouragement of, any illegal act, arrangement or combination as against the law made and provided in such cases.

ARTICLE III

Membership

Section 1. This association shall be composed of individuals, firms and corporations regularly engaged in the sheet metal and warm air heating business within the State of Indiana.

Section 2. Wherever possible the members should organize themselves into local associations, and in localities where locals are organized, membership in this association may be through local associations.

Section 3. Individuals, firms or corporations eligible for membership in localities where no locals exist may affiliate with the state association in the individual membership class.

Section 4. Members of the state association may affiliate with any national association they deem fit, but they shall pay the dues of the association of which they become members.

ARTICLE IV

Dues

Section 1. The dues for each member of the state association shall be \$7.00 per annum, beginning January 1st, 1928.

Section 2. All dues shall be payable annually in advance on January 1st of the calendar year.

ARTICLE V

Quorum

Section 1. Fifteen members in good standing shall constitute a quorum for the transaction of business at any regular meeting of the association.

ARTICLE VI

Officers

Section 1. The officers of this

association shall be a president, two vice-presidents, recording secretary, treasurer and an executive secretary.

Section 2. The board of directors is to be composed of the elective officers and six members.

Section 3. The president shall appoint a nominating committee of three members in good standing the first day of the annual convention who shall select a complete ticket. The chair shall ask for other nominations from the floor from any member in good standing up to the moment of election.

Section 4. The president, two vice-presidents, recording secretary and treasurer shall be elected annually by ballot. The directors shall also be elected by ballot—two of the six to be elected for a term of three years, two for a term of two years and two for a term of one year, and two on each succeeding year for terms of three years.

Section 5. The executive secre-



Paul R. Jordan
Executive Secretary

tary shall be employed by the board of directors and shall carry on the necessary business under the direction of the board of directors.

Section 6. Voting for officers

and directors shall be by ballot and the candidates receiving the highest number of votes shall be declared elected.

ARTICLE VII

Duties of Officers

Section 1. The president shall preside at all meetings of the association and of the directors; shall appoint all committees unless otherwise directed by the convention, and act as an ex-officio member thereof; shall issue calls for all meetings of the directors, and shall perform such other duties as are usual to his office.

Section 2. The vice-president shall, in the absence or disability of the president, perform the duties devolving upon him.

Section 3. The recording secretary shall keep a record of all business transacted at the regular annual meeting of the association, and at any special meetings that may be called by the president, and file reports of all proceedings to the executive secretary, whose duty it shall be to file these with all records of the association.

Section 4. The executive secretary shall be under the direct supervision of the president and board of directors, and shall keep an accurate record of all business transacted at meetings of the board of directors, and a complete roster of membership of the association in books provided for that purpose. He shall collect all dues and accounts due the association and keep an accurate record of receipts and disbursements of the association, or the board of directors, and perform all duties pertaining to his office. He shall remit all money to the treasurer promptly from collections, less the fees due him for his services.

Section 5. The treasurer shall receive all money remitted him by the executive secretary; give his receipt therefor; and shall pay all orders signed by the president and attested by the executive secretary. He shall make a written report at the annual meeting of the association and turn over all books, money and other property of the association at the expiration of his term

of office to his successor. He shall give a trust company bond for the faithful performance of the duties of his office in such amount as may be required by the board of directors.

Section 6. The board of directors shall have general charge of the affairs, property and assets of the association.

Section 7. The board of directors shall have power to remove any officer or member of the association for failure properly to perform the duties of his office, or for conduct unbecoming an officer or member of the association. The person so accused shall have due hearing and



O. Voorhees
Recording Secretary

ample opportunity to defend his actions.

Section 8. In case of the death, removal or resignation of any officer or member of the board of directors, the board of directors shall fill the vacancy thus created until the next annual meeting.

Section 9. As it is the duty of the directors to carry out the objects and purposes of the association in the interim between meetings of the association, the board may exercise all the powers of the association subject to the constitution and by-laws.

Section 10. A majority of the board of directors shall constitute a quorum for the transaction of business. A member of the board may cast his vote on any specific question by mail, but no proxy shall be recognized.

Section 11. Members of the board of directors shall be reimbursed for railroad fare incurred by attendance at any special meetings of the board.

ARTICLE VIII

Annual Convention

Section 1. The annual convention and meetings of this association shall be held preferably in the first quarter of the calendar year, at such places and dates as the convention or directors may select. The program shall be so arranged that the two branches will be given equal consideration.

Section 2. All members of the state association in good and regular standing shall be entitled to a vote in the convention and be eligible for any office.

Section 3. Special meetings of the association may be called upon ten days' notice by the president and board of directors, providing, however, that no business shall be transacted at such meetings except that set forth in the call.

ARTICLE IX

Standing Committees

Section 1. The annual convention shall determine the standing committees and their duties.

Section 2. There shall be elected at the annual convention such delegates as are to represent this association at any national convention, and only those who are members of such national association are eligible to be made delegates to its meetings.

ARTICLE X

Individual Membership Applications

Section 1. Applications for membership in the individual class shall be referred to the president and recording secretary for approval. The president shall have power to refer all such membership applications to the board of directors.

ARTICLE XI

Amendments

Section 1. These by-laws may be amended at any annual meeting by a two-thirds majority of all the votes cast.

Following the order laid down in the foregoing by-laws, the chair



Photograph of Exhibits in Hotel Denison, Indianapolis, Durring Convention of Sheet Metal and Warm Air Heating Association of Indiana.

appointed the Nominating Committee who suggested the following names for officers:

President, William Waters, Indianapolis; First Vice-President, Frank E. Anderson, Terre Haute; Second Vice-President, V. L. Roland, Elkhart; Recording Secretary, O. Voorhees, Indianapolis; Treasurer, Charles E. Tharp, Fort Wayne.

The directors for three years are Joseph Gardner, Indianapolis; Thomas Ewing, Huntington. For two years, John Volkema, Lafayette; Charles Gatz. One year, Homer Selch and Harry Beaman, Indianapolis.

A resolution of sympathy on the death of W. A. Brown, Marion, Indiana, was passed. The committee consisted of Joe Mattingly, Homer Selch and Joseph Gardner.

The Wednesday session opened with an address by Stanley A. Knisely, Sheet Steel Trade Extension Committee, on "Selling It Is the Job," in which he emphasized the fact that production is only secondary. This address will be published in one or two later issues of AMERICAN ARTISAN.

Then came a very able address by George Steck, Central Alloy Steel Corporation, Massillon, Ohio, on "Rust Resisting Iron." In this talk was given some of the reasons why iron corrodes and how it can be made not to. It is published on another page of this issue.

"Building Public Appreciation" was the subject of an address by Harvey A. Call, Copper & Brass Research Association. Mr. Call's address was very well received and is published in full on another page of this issue. This concluded the morning program.

At noon the wives of the members were entertained at a luncheon at the Columbus Club by the Fur-Mets, which was followed by a theater party. By noon of Wednesday the registration had reached 133, making this the largest attendance at an Indiana convention for some years.

The afternoon program contained several good addresses. C. F. Stothard of the Hardware Mutual Casualty Company outlined the many excellent features his company has to offer sheet metal contractors in the way of protection.

Howard E. Jones gave an address on "It Can Be Done Because It Is Being Done," which was well received.

O. Voorhees, President Twentieth Century Heating Company, gave an inspirational address on the subject of "Let's All Be Good Fellows Together." Mr. Voorhees has always had his whole heart and soul in the welfare of the sheet metal and warm air heating industries and he made a very strong appeal for the coöperation of all sheet metal and furnace men for the betterment of conditions in the industry.

Edward E. Green of the Arsenal Technical High School, Indianapolis, told of the work the school is doing in training boys for work in the sheet metal industry.

Thursday morning's program was filled with good things for the edification of the sheet metal contractor and warm air furnace installer. Edward Carter gave a very interesting talk on "Keeping Yourself Before Your Trade." In this he indicated how successful contractors in different parts of the country are employing advertising in the local

newspapers. The address was well received.

Mr. Carter was followed by Professor J. D. Hoffman of Purdue University. Professor Hoffman spoke on some of the difficulties in



Joseph E. Mattingly
Director

the warm air heating industry. What he said, in part, follows:

"The centralized warm-air heating plant is the natural outgrowth of the isolated stove-in-every-room method of heating. Instead of a number of stove fires in the building, one large stove is set up in the basement and enclosed in the requisite sheet metal or brick casing so that the cooled air from the rooms may return to the bottom of the large stove and be heated as it passes up between the stove and the casing and thence through the warm air pipes to the rooms again, completing the circuit. Thus the muss and effort of fueling and taking care of the various heating units are all confined to the basement and to one unit. Such a system is the simplest type of heating system in use today. In addition, if it is properly installed, it is safe from fire and explosion and is unusually well adapted to changes in weather conditions.

"Any centralized system of heating applied to the average residence today meets with some *real problems* in attempting to overcome the unsatisfactory building conditions so commonly employed. *And herein lies our first real difficulty.*

"Heat is lost from a house in three ways—by *conduction* through the outer shell to the air currents without, by *radiation*, and by *air leakage*. In a well-built house with outer shell well insulated all of these losses should be small. In a poorly built house, conduction through the walls is heavy and the air leakage is frequently excessive.

"As long as the walls are reasonably tight and the air-leakage small the problem is a simple one for the furnace man, but when, as is true in too many cases, the building construction is so loosely made that the heating system is called upon to heat large quantities of outside air which leaks into the room, the problem is more complicated.

"The improperly designed warm-air system, in attempting to meet this air-leakage problem is handicapped because of the varying air pressures created in the various rooms of the house. Those on the windward side have the heaviest pressure. The air which leaks into the room being naturally colder than the room air has a tendency to overbalance the upward pressure of the warm air in the supply pipe and reduces the velocity of the air quite materially. At times this effect is so great as to cause a reversal of this current of air and the rooms will be cold. This condition must be met by adjusting the pipe sizes and installing them in such a way that the friction losses in the heating lines may be reduced to a minimum.

"Because of these difficulties warm air systems should be planned and installed with regard to exact fundamental physical laws, and the furnace man should be the first man to insist upon a careful consideration of the house and its influence upon the heating system within. It is to your interest to urge upon prospective home owners that they build houses of such character that on cold days the warm air may be kept within the house and the cold air kept without.

"Now, concerning the heating system itself. Three elements form the warm air line—the leader, the stack and the register. In the

natural air circulation the stack is the neck of the bottle so to speak. There has been very little difficulty in the sizing of the leader pipes. Also there has been no serious trouble with the sizing of the registers, but the type of partition wall which is so common in the ordinary residence necessitates keeping the stack to the smallest size possible. The 4-inch studded wall is still in vogue. This should be changed to 6-inch studs on all parts of the partition wall where warm air stacks are run to second floor rooms. This is important.

"At present the Standard Code first estimates the size of the leader or warm-air pipe and then specifies 70 per cent of this size as the size of the stack. This relation of 70 per cent should be taken as an absolute minimum. With a 4-inch wall this will give satisfactory results for a moderate sized room not heavily exposed, but such a wall is too thin where the room is heavily exposed. All pipes of this sort are more efficient where the length and breadth dimensions of the cross section are equalized, and 6-inch partitions are tending in that direction.

"Other points of difficulty are encountered in the return lines which are frequently too small. These



Professor J. D. Hoffman

should be equal in cross sectional area to the sum of all the leader pipes leaving the furnace; in the transition fittings between the leader and stack, which should be de-

signed for a free and easy flow; and in selecting the furnace, which should be selected according to the specifications of the Standard Code.

"The Standard Code is an aid to the legitimate furnace man, a protection to the purchaser and a guarantee that future furnace heating will merit the confidence of the public. Since the Code was first approved by the five national societies interested in furnace heating, over 500,000 copies have been printed and circulated to dealers and prospective customers. The fifth edition is now in press.

"In addition to the Code proper, the Code has been written in ordinance form for use by cities, towns and incorporated villages as a model for use in regulating furnace heating in a municipality. This ordinance is printed and ready for distribution. Copies of the Code and Ordinance may be obtained by writing Secretary Williams, 174 East Long Street, Columbus, Ohio."

In closing his address, Professor Hoffman said, "Let us know our business before we do anything else." The warm air heating system has an appeal to the public because of its simplicity, safety and the economy which it makes possible. Its adaptability is one of its strongest appeals. The economy appeal is also worthy of note, because if you touch a man's pocket book, you touch his heart; you are performing a surgical operation that must be carefully done. "With all of your work be as scientific as the people will permit."

Charles E. Hall, President of the National Warm Air Heating and Ventilating Association, was scheduled to make an address, but due to the fact that he was called for jury service it was impossible for him to be present.

Thursday afternoon the meeting was opened with an address by Jere Doherty of Folansbee Brothers Company, speaking on "Organization." This address will appear in a later issue of AMERICAN ARTISAN.

Addresses were made also by J. C. Miles of the Warm Air Furnace Fan Company and George J. Duerr,

Editor of AMERICAN ARTISAN, the former on "The Misfortunes of the Furnace Industry," and the latter on "Helpful Hints in Selling." These addresses will appear in a later issue of AMERICAN ARTISAN.

The final speaker of the afternoon was W. C. Markle, Secretary of the National Association of Sheet Metal Contractors. Mr. Markle spoke on "Are You Needed?"

In opening his address Mr. Markle said: "Men are needed so long as they render a service. What service are you rendering your community? His point was very well

tractors who had got into trouble because of a lack of understanding, and how the national secretary's office had been the means of bringing them together.

He also spoke of the membership of the National Association of Sheet Metal Contractors in the United States Chamber of Commerce. Comparing this membership and its importance with that of other trade associations, Mr. Markle said that the National Association of Sheet Metal Contractors has eight votes in the Chamber, while there are only a total of ten votes allotted to each trade association.

Mr. Markle spoke of the importance of a legislative committee to watch the legislation that is proposed for passed to see that it does not contain provisions that are detrimental to the industry.

Mr. Markle's talk was cut extremely short on account of the lack of time, but before closing he called attention to the certificate of membership that the National Association of Sheet Metal Contractors is now giving its members.

The banquet was held in the Chamber of Commerce and was attended by some 140 sheet metal and warm air heating contractors and their wives and children. The dinner was excellently prepared and served. R. S. "Tommy" Thompson, president of the Fur-Mets, presided. The toastmaster, Mr. Goodman, automobile editor of the Indianapolis *Daily Star*, did a fine job of toastmastering. He introduced with a running fire of hilarity-producing puns and chokes, in rapid succession, President Bill Waters, President-elect George Thomas of the Fur-Mets; Paul R. Jordan, Executive Secretary of the state association; W. C. Markle, Secretary of the national association, and Julien Wetzel, President of the Indianapolis Kiwanis Club. Mr. Wetzel was the principal speaker of the evening and kept the audience in an uproar for more than an hour.

Dancing provided the entertainment for the guests of the Fur-Mets during the remainder of the evening. Thus one of the best con-



Charles E. Tharp
Treasurer

illustrated by a reference to the passing of two prominent Pittsburgh citizens, the one dying with little attention paid to his passing, while the other's decease left the citizens of Pittsburgh feeling a distinct loss.

Mr. Markle then took up the subject of why it pays to belong to an association and why the National Association of Sheet Metal Contractors is an organization that is doing things for the industry at large.

He spoke of bringing understanding to the problems of the sheet metal contractor and with a homely reference to the experience of two Pittsburgh sheet metal con-

ventions that the Indiana men have ever staged came to a close. Prospects for the rapid growth of the Sheet Metal and Warm Air Heating Contractors' Association of Indiana, Inc., were never brighter than they are at the present time. W. H. Zeigler was presented with a beautiful gold watch as a prize for bringing in the most members during 1927.

After giving the Fur-Mets all the credit they deserve for the excellent manner in which they carried out their end of the program, mention must be made of the noble work of the Ladies' Reception Committee, which consisted of the Indianapolis women. The manner in which these ladies took charge of the members' wives, was all that could be expected of them and they deserve great praise for their work and interest in the convention. They were as follows:

Ladies' Reception Committee

Mrs. J. T. Pope, Chairman; Mrs. Thos. V. Layery, Mrs. Wm. Herman, Mrs. Walter Class, Mrs. W. S. Waters, Mrs. Tommy Thompson, Mrs. Paul R. Jordan, Mrs. Ed Gardner, Mrs. Jno. Henley.

Membership and Guests in Attendance

A

Albright, Edward D., Moncrief Heating Company, 2102 South Calhoun Street, Fort Wayne, Indiana.

Anderson, F. E., Terre Haute, Indiana.

B

Balkema, Mrs. John, 104 Main Street, LaFayette, Indiana.

Balkema, John, 104 Main Street, LaFayette, Indiana.

Barnes, Creston W., Excelsior Steel Furnace Company, Kokomo, Indiana.

Barton, Jay, Chicago, Illinois.

Beaman, H. A., Allred Manufacturing Company, 2829 Northwestern Avenue, Indianapolis, Indiana.

Blythe, D. G., New York City.

Boone, Daniel, Hall-Neal Furnace Company, Indianapolis, Indiana.

Boone, Everett, 402 West Main Street, Greensburg, Indiana.

Booth, Ben, 142 East Ohio Street, Indianapolis, Indiana.

Burroughs, L. D., Monitor Furnace Company, Cincinnati, Ohio.

Burton, Otis, Orleans, Indiana.

C

Cain, A. S., American Furnace Company, Richmond, Indiana.

Cain, Robert, H. Cain and Son, Connersville, Indiana.

Call, H. A., Copper & Brass Research Association, 25 Broadway, New York City.

Carsen, William, The Unishear Company, Inc., 459 West Washington Blvd., Chicago, Illinois.

Carter, E. C., Chicago, Illinois.

Class, M., M. Class and Son, Indianapolis, Indiana.

Class, W. M., M. Class & Son, 1710 East 10th Street, Indianapolis, Indiana.

Cohn, Etta, American Artisan, 620 South Michigan Avenue, Chicago, Illinois.

Cooper, L. A., Standard Metal Company, 3744 Salem Avenue, Indianapolis, Indiana.

Cordes, P. L., Cordes Hardware Company, Seymour, Indiana.

Cramer, Ivan, Levezey Sheet Metal Works, 222 South 15th Street, New Castle, Indiana.

Cummings, D. E., The Thatcher Company, 7555 South Shore Drive, Chicago, Illinois.

D

Daufel, Ed., Daufel Brothers, 1183 Hoyen, Indianapolis, Indiana.

Detmer, Ed., Mulberry Street, Rising Sun, Indiana.

Daufel, Ed., Daufel Brothers, 1183 Hoyen, Indianapolis, Indiana.

Detmer, Ed., Mulberry Street, Rising Sun, Indiana.

Gates, Charles L., Gary, Indiana.

Gifford, D. J., Tuttle & Bailey Manufacturing Company, 4104 Irving Park Boulevard, Chicago, Illinois.

Gilliespie, Lee W., Ferdinand Dieckmann Company, 1612 Clarewood Avenue, Cincinnati, Ohio.

Glegg, P. D., Muncie, Indiana.

Giffin, H. S., Wise Furnace Company, 581 Harrison Avenue, Lima, Ohio.

Glessner, A. A., Hart & Cooley Manufacturing Company, 61 West Kinzie Street, Chicago, Illinois.

Griffin, H. E., H. E. Griffin Sheet Metal Shop, 1708 First Street, Bedford, Indiana.

Grote, W. E., E. M. Priffs, 629 Washington Street, Gary, Indiana.

G

Hackenburg, J. T., Calumet Sheet Metal Works, 614 Forsythe Avenue, Calumet City, Indiana.

Hall, Charles E., Indianapolis, Indiana.

Hansacker, Don, Rudy Furnace Company, Anna, Illinois.

Harper, G. D., 49 South Indiana Street, Danville, Illinois.

Harris, H. G., Bloomington, Indiana.

Hausser, Raymond, Charles Hausser & Son, 2514 Bethel Avenue, Indianapolis, Indiana.

Hawkins, Raymond, 931 Virginia Avenue, Indianapolis, Indiana.

Headlee, B. M., P. F. Deady & Company, Terre Haute, Indiana.

Heads, Fred, Hart & Cooley Manufacturing Company, 61 West Kinzie Street, Chicago, Illinois.

Heath, H. L., Monticello, Indiana.

Heflin, C. C., 115 North Meridian, Lebanon, Indiana.

Henley, John C., Tanner & Company, 2137 Park Avenue, Indianapolis, Indiana.

Herman, John, 1725 North Oxford Street, Indianapolis, Indiana.

Herman, Wm., Herman & Walters Company, 1326 Parker, Indianapolis, Indiana.

Herrmann, Otto, Dollansbee Brothers Company, 5002 North Capitol Avenue, Indianapolis, Ind.

Holman, J. W., National Paint & Varnish Company, 2050 North Meridian Street, Cleveland, Ohio.

Huck, Harold, Co-Operative Tin Shops, 1703 North Twelfth Street, LaFayette, Indiana.

Huck, Mrs. Harold, Co-Operative Tin Shops, 1703 North Twelfth Street, LaFayette, Indiana.

Huetner, C. A., Peoples Hardware Company, Gary, Indiana.

Huguenard, W. C., Fort Wayne, Indiana.

J

Johnston, J. E., International Heater



W. C. Markle
National Secretary

DeWeese, Frank, DeWeese "Sudden Service," 1016 N. Anthony Street, Fort Wayne, Indiana.

Dewers, Clifford, Aurora, Indiana.

Doherty, Jere, Follansbee Brothers Company, 321 South Missouri Avenue, Indianapolis, Indiana.

Doyle, F. J., Doyle Heating and Sheet Metal Company, 27 North East Street, Indianapolis, Indiana.

Dudley, A. W., A. W. Dudley Company, 1406 Wabash Avenue, Terre Haute, Indiana.

Duerr, George J., American Artisan, 620 South Michigan Avenue, Chicago, Illinois.

Duerr, Mrs. Geo. J., Chicago, Illinois.

E

Eaglesfield, J. L., Eaglesfield Ventilator Company, Indianapolis, Indiana.

Elzey, Ward, Follansbee Brothers Company, 310 Beecher Street, Indianapolis, Indiana.

Emerson, R. B., Colburn Heater Company, Auburn, Indiana.

Ensfield, W. H., Ensfield & Geyer, Logansport, Indiana.

Epperson, B. A., English Hotel, Cincinnati, Ohio.

Company, 1933 Wentworth Avenue, Chicago, Illinois.

Jones, Hurbert C., Tanner & Company, 4001 East Washington Street, Indianapolis, Indiana.

Jones, Howard E., Sheet Metal Worker, 45 West 45th Street, New York City.

Jones, H. R., Milwaukee Corrugating Company, Indianapolis, Indiana.

Jordan, Paul R., Paul R. Jordan Company, 631 South Delaware Street, Indianapolis, Indiana.

Joslin, George, Tanner & Company, 525 Colorado Avenue, Indianapolis, Indiana.

K

Kalberer, E. J., 1705 Charles Street, LaFayette, Indiana.

Kalberer, Mrs. E. J., 1706 Charles Street, LaFayette, Indiana.

Kaplan, J., American Artisan, Chicago, Illinois.

Kelly, George A., Meyer Furnace Company, 3442 Kenwood Avenue, Peoria, Illinois.

Kilbourn, G. E., Homer Furnace Company, Coldwater, Michigan.

King, G. H., Standard Metal Company, 142 South Prim Street, Indianapolis, Indiana.

Klein, W. A., Braden Manufacturing Company, Terre Haute, Indiana.

Klepinger, Geneva, Co-Operative Tin Shop, LaFayette, Indiana.

Koenneman, W. C., Premier Warm Air Heater Company, 907 Union Street, LaFayette, Indiana.

Korshot, Jess L., 1324 North 14th Street, LaFayette, Indiana.

H. P. Kuhn, Hagerstown, Indiana.

Kuhn, Mearle, 139 South Eighth Street, Newcastle, Indiana.

Kress, Joseph, 2105 East Washington Street, Indianapolis, Indiana.

Kruse, Robert, Kruse Company, Indianapolis, Indiana.

L

Larney, J. W., Gilt Edge Heating Company, Fort Wayne, Indiana.

Lavery, T. V., 2416 East Michigan Street, Indianapolis, Indiana.

Leimkuehler, L. C., Copper & Brass Research Association, Landreth Building, St. Louis, Missouri.

Livzey, Elmer, Livezey Sheet Metal Works, 220 South 15th Street, New Castle, Indiana.

Lockhart, Carl B., Banner Mahonning Furnace Company, Youngstown, Ohio.

Loesch, H. C., C. W. Loesch & Sons, 521 Jackson Street, Columbus, Indiana.

Loesch, W. C., W. C. Loesch & Sons, 521 Jackson Street, Columbus, Indiana.

Lumm, Charles F., 202 South Randolph Street, Garrett, Indiana.

MC

McCREA, W. S., Banner-Mahonning Furnace Company, Pittsburgh, Pennsylvania.

McCAN, W. F., Indianapolis, Indiana.

McDaniels, George H., Co-Operative Tin Shop, 1413 Union Street, LaFayette, Indiana.

McElwain, Mrs. H. O., 329 West Marion Street, Elkhart, Indiana.

McElwain, H. O., Lenox Furnace Company, 329 Marion Street, Elkhart, Indiana.

M

Mackin, T. Reid, International Heater Company, 1933 Wentworth Avenue, Chicago, Illinois.

Madinger, E. F., Fryberger & Eilers, 2314 East Washington Street, Indianapolis, Indiana.

Manion, Jno., Jno. Manion Company, 1017 Ohio Street, Terre Haute, Indiana.

Manion, Mrs. Jno., Terre Haute, Indiana.

Markle, W. C., 336 Fourth Avenue, Pittsburgh, Pennsylvania.

Mattingly, J. E., Henry C. Smithers Roofing Company, Indianapolis, Indiana.

Messmer, Geo. E., Bridge & Beach Manufacturing Company, 4204 North Union Boulevard, St. Louis, Missouri.

Meyer, Mrs. Jos. A., Evansville, Indiana.

Meyer, Jos. A., 1417 Main Street, Evansville, Indiana.

Michael, Herman I., Whitney Tin Shop, 925 East Whiteley Street, Muncie, Indiana.

Miles, J. C., The Warm Air Furnace Fan Company, Cleveland, Ohio.

Miller, C. D., C. D. Miller & Son, New Castle, Indiana.

Miller, Nelson, C. D. Miller & Son, New Castle, Indiana.

Miller, E. M., E. M. Miller Sheet Metal Works, Fairmount, Indiana.

Mills, Claud W., Bridge & Beach Manufacturing Company, 812 West Jackson Street, Muncie, Indiana.

Morrison, C. A., Bedford, Indiana.

Myers, Bert, Bloomington Radiator & Sheet Metal Company, Bloomington, Indiana.

Myers, E. A., The Perfection Furnace Pipe Company, 862 Prouty Avenue, Toledo, Ohio.

N

Neal, Harry W., Hall-Neal Furnace Company, Indianapolis.

Nichols, O. A., Follansbee Brothers Company, Indianapolis.

Novotny, John, 1325 Washington Street, Gary.

O

Ochs, T. L., Ochs, Pisotum, Illinois.

Oliphant, J. M., The Meyer Furnace Company, Indianapolis.

Olson, G. W., Chicago.

P

Pearson, Charles J., U. S. Register Company, Battle Creek, Michigan.

Perkins, Walter, Rushville, Indiana.

Peterson, Harry B., Quality Sheet Metal Works, Indianapolis.

Pope, J. T., Kenneth Pope, 6306 East Washington Street, Indianapolis.

R

Rheinsch, George, Sidney, Ohio.

Ricketts, Kenneth, A. D. Ricketts & Son, 620 Madison Avenue, Anderson, Indiana.

Rissing, John F., Rissing & Rundell, 115 East Columbia Street, Fort Wayne, Indiana.

Roland, Mrs. Virgil L., Elkhart, Indiana.

Roland, Virgil L., Elkhart, Indiana.

Roth, Carl, Brader Manufacturing Company, Terre Haute, Indiana.

S

Sapp, C. L., Farquhar Furnace Company, Wilmington, Ohio.

Schlemmer, Blount, Schlemmer & Schlemmer, Warsaw, Indiana.

Schu, Edwin, C. A. Schu & Son, Carlisle, Indiana.

Schwendeman, George, Worland & Schwendeman, Greensburg, Indiana.

Seifert, W. O., Peck, Stow & Wilcox Company, 2104 West 83rd Street, Cleveland, Ohio.

Selch, Homer, 844 Virginia Avenue, Indianapolis, Indiana.

Skinner, E. H., Fox Furnace Company, Elyria, Ohio.

Smart, T. J., Chicago, Ill.

Smith, Reed, C. A. Morrison, Bedford, Indiana.

Spillman, Edward G., Lenox Furnace Company, Winslow, Indiana.

Stothard, C. F., Hardware Insurance Company, Indianapolis, Indiana.

Steck, George, Central Alloy Steel Corporation, Massillon, Ohio.

Stewart, William, 2234 East Washington Street, Indianapolis, Indiana.

Stockwell, R. W., Langenberg Manufacturing Company, St. Louis, Missouri.

Strassner, W. M., Charles K. Strassner, Anderson, Indiana.

Swisher, D. R., Roland-Beach Company, 721 West Main Street, Richmond, Indiana.

T

Taylor, H. E., AMERICAN ARTISAN, Chicago, Illinois.

Teschner, W. C., Vincennes, Indiana.

Tharp, Charles E., 3509 South Harrison Street, Fort Wayne, Indiana.

Thomas, Effie M., The Standard Metal Company, Indianapolis, Indiana.

Thomas, George, The Standard Metal Company, Indianapolis, Indiana.

Thomas, James A., 1405 West 26th Street, Indianapolis, Indiana.

Thomas, J. H., A. W. Dudley Company, Terre Haute, Indiana.

Thompson, R. S., Mt. Vernon Furnace & Manufacturing Company, Mt. Vernon, Illinois.

V

Voorhees, G. A., Century Heating Service Company, Indianapolis, Indiana.

Voorhees, O., Century Heating Service Company, Indianapolis, Indiana.

W

Wachtel, Wm. E., Danville, Indiana.

Wagner, O. S., Wagner Manufacturing Company, Franklin, Indiana.

Wallace, M. C., Wallace Supply Company, Fort Wayne, Indiana.

Wallace, R. R., Colburn Heater Company, Chicago.

Walker, R. A., Columbus, Ohio.

Walters, Mrs. Thomas, Herman & Walters, Indianapolis, Indiana.

Walters, Thomas, Herman & Walters Company, Indianapolis, Indiana.

Waters, W. S., Central Sheet Metal Co., Indianapolis, Indiana.

Watson, Clarence, Henry Watson & Son, Vincennes, Indiana.

Wesbecher, J. J., Gary, Indiana.

Wertzberger, A., Calumet Sheet Metal Works, Hammond, Indiana.

Wilcox, Mrs. R. T., Standard Metal Company, Indianapolis, Indiana.

Wilcox, R. T., Standard Metal Company, Indianapolis, Indiana.

Wilkening, F. A., The Standard Metal Company, Indianapolis, Indiana.

Wolf, W. C., Fort Wayne, Indiana.

Woerde, A. J., 1616 North Rural Street, Indianapolis, Indiana.

Z

Ziegler, Walter H., F. O. Schoedinger, Columbus, Ohio.

Zweig, Philip Zweig Roofing Company, Gary, Indiana.

Exhibitors Present

XXth Century Service Company, Indianapolis.

Tanner & Company, Indianapolis.

Paul R. Jordan & Company, Indianapolis.

Hart & Cooley Manufacturing Company, New Britain, Connecticut.

The Kruse Company, Indianapolis.

The Thatcher Company, Newark, New Jersey.

American Furnace Company, St. Louis.

Arsenal Technical Schools, Indianapolis.

Folansbee Brothers, Indianapolis.
Bridge & Beach Manufacturing Company, St. Louis.
Hardware Mutual Casualty Company, Stevens Point, Wisconsin.
The Unishear Company, Chicago.
Tuttle & Bailey Company, New York.
Hall-Neal Company, Indianapolis.

Standard Metal Company, Indianapolis.
Homer Furnace Company, Coldwater, Michigan.
Fox Furnace Company, Elyria, Ohio.
Langenberg Manufacturing Company, St. Louis.
Monitor Furnace Company, Cincinnati.
Mount Vernon Furnace Company, Mt. Vernon, Illinois.

Colburn Heater Company, Chicago.
Banner Mahoning Furnace Company, Youngstown, Ohio.
Marshalltown Heater Company, Marshalltown, Iowa.
United States Register Company, Battle Creek, Michigan.
Allred Manufacturing Company, Indianapolis.

Organization—What Is It?—Why Is It?—What Does It Do?

Some Tangible Benefits and Intangible Advantages That Accrue to Trade Association Members

By JERE J. DOHERTY

IT IS an honor to be allowed to address you at any time, but particularly so just now at your state convention.

Many of you know it is less than a year since I came into your midst, and yet this is more than long enough to realize the fine bunch of fellows you are.

To handle the subject given me by your chairman requires a more adept mind than I possess, and more time than can be allowed, but it is possible to bring out clearly some of the most important points in a general way, and my discussion will be limited to them.

Organization. What is it? Why is it? What does it do? First of all—what is organization?

The dictionary may give a different answer, but you all know from practical experience—"Organization is the joining of two or more individuals, firms, groups or materials to produce good results in an efficient manner for the betterment of the whole." Notice particularly, gentlemen, "for the whole"—not "for the individual." The individual is helped by being part of the "whole."

Secondly: Why is organization necessary? It is an established fact that individual efforts fail to produce permanent and lasting effects.

Third: Results—cooperative work and thoughts bring forth new ideas and corrects or strengthens old, proven facts. It makes permanent things that heretofore were only visionary.

The best illustration of this was the draft inaugurated in the World War. The United States was in an enviable position of balancing the scales.

But, the war is over! Any ex-service man could tell you that—many from sad experience. Let's

of murder. But they persisted, and today their association is a power able to dictate what is right and see that it is done.

During their early period, these men were terribly discouraged many times at the lack of interest on the part of their fellow workers who refused to join their ranks. Many good things they approved failed to pass the city councils and state legislature because they represented only a small portion of the whole. Their intensity of purpose, tireless labor and earnest enthusiasm did force several constructive changes, and gradually the other fellow workers realized results could be accomplished by combined efforts so they came in. One or two first, then groups, until finally the majority of sheet metal workers became full-fledged members of the association.

There is not time to go into details as to how they were all handled, but taking the adjusted compensation insurance rates as an example, the Pennsylvania association did enough on this alone to warrant its permanent existence. When the law was enacted the Insurance Board arbitrarily fixed the rates. They were divided into three classes:

- Shop work.
- * Sheet metal and roofing—outside.

Furnace work.

Shop work and furnace work were rated at \$1.90 per \$100 payroll. Outside work at \$3.95. At the Pennsylvania convention held

YOU do not belong in a back alley anymore than a drug store or a jewelry shop. They work to get the public's good will—and money) and, so do you. Your work requires many years of education, both by study and application, and you are deserving of the best. You will only get what you ask for. Clean up your own backyard and stamp out the tramp "tinker," and the poor worker, the dead-beats who harass you in bidding on jobs and weaken your general credit standing. You can do this—but you cannot do it alone.

get down to facts, so we'll take one of your sister organizations—the Pennsylvania State Association.

It was my distinct pleasure to work with the men of this association during the past twenty years. They started out with a mere handful of public-spirited men trying to do right, but were rebuffed at every turn; accused of everything short

in Reading, Pennsylvania, in 1915, a representative of a large insurance company discussed this condition and created such an impression that a committee was appointed to investigate.

This committee learned that sheet metal workers were rated nearly three times as much as plumbers. Gentlemen, you know your occupation is no more—or only slightly so—hazardous than the plumber's. An injustice had been done, so the investigation continued and it was found all the receipts had been credited to the plumbers while the accidents were charged to the sheet metal workers. A fine mess! It was caused, however, by the fact that in the eastern part of the state most of the sheet metal shops did plumbing as well, so the state—trying to save itself work—saw no reason for keeping them separate.

After many interviews with state officials an adjustment was ordered effective at once. The rate was changed so that shops doing 50 per cent or more shop work were listed at only \$1.80 (15 cents less than the original flat shop rate), and later on this was reduced to \$1.50, then to \$1.15, and finally, in 1927, to \$1.00.

This year the rate was increased to \$1.30 on account of increased compensation to the employe. Right here is another case of organization, only on the other side, for it is very probable the unions were responsible for the increased compensation.

The money saved by any sheet metal worker on this alone more than pays his annual dues, providing he has three or more men.

If you, as an individual in Pennsylvania, think "All is not right on the Patomac"—all you must do is to inform the association secretary.

What happens to the other fellow? One case we know of where a man paid a rate of \$4.50 because of wrong classification. The insurance agent either didn't know—or maybe didn't care because the higher rate paid him more commission.

The Pennsylvania state association maintains a permanent legal

committee to keep constant watch on all bills introduced in the legislature, and this committee has killed or curtailed many that were detrimental to the sheet metal worker. If this committee had not been on the job, serious damage may have been done.

The association also coöperates with the Industry School of the Carnegie Institute of Technology. The apprentices work part time and spend the balance learning shop practices, blue print reading and other studies taught by this high-class educational institution. These students are accepted without reserve by all the other students and professors in the school as well as by the general public.

There are many other things carried on by this organization, but I am not fully enough conversant with them just now to go into them.

In general—outside of the positive benefits of organization you have the intangible advantages derived from contact with your fellow workers—fairer dealings—open discussion of topics that might cause ill feelings—rating in the business world; in general—respect and confidence of the public.

George Thomas Becomes President of the Fur-Mets of Indiana

The Indiana Fur-Mets held their meeting Thursday, January 26, 1928. President R. S. "Tommy" Thompson presided, while Harry R. Jones recorded.

The election of officers resulted as follows: President, George Thomas, Standard Metal Company, Indianapolis; First Vice President, Fred Heads, Hart & Cooley Manufacturing Company, Chicago; Second Vice President, George J. Duerr, Editor AMERICAN ARTISAN, Chicago; Third Vice President, Edward C. Carter; Fourth Vice President, F. S. Boone, Hall-Neal Company, Indianapolis; Secretary, Harry Jones, Milwaukee Corrugating Company, Indianapolis; Treasurer, John C. Henley, Tanner and Company, Indianapolis.

The directors are as follows: Chairman R. S. Thompson, Mount

Vernon Furnace Company; George C. Joslin, Tanner & Company; F. A. Wilkening, Standard Metals Company; Jere Doherty, Folansbee Brothers Company.

A resolution of thanks to the trade papers for the assistance they have been to the organization during the year was passed.

A vote of thanks and congratulations to W. H. Zeigler was passed, Mr. Zeigler being instrumental in bringing into the contractors' organization 21 members during 1927.

Ben Booth was introduced to the members. Mr. Booth is retired from Tanner & Company and was made an honorary member for life of the Fur-Mets organization.

Grand Rapids Sheet Metal and Heating Engineers Meet

On Tuesday evening, January 3rd, the Grand Rapids Sheet Metal and Heating Engineers held their regular monthly meeting at the office of M. E. Newell, Weiss Service Building. All members present agreed that Mr. Newell's office was a fine place to hold meetings, with its fine upholstered chairs and davenport, but a warm air heating plant should be installed or a non-union janitor employed to keep the fire going.

Promptly at 8:30 the meeting was called to order by President Lamoreaux.

Election of officers was the major business of the evening and resulted as follows: President, Ed Dykstrahuis; vice-president, Cliff Herrendeen; secretary, Ike Lammers; treasurer, Frank Oole. Retiring President Don Lamoreaux thanked the members for the support given him during the past year and turned the chair over to President Ed Dykstrahuis, wishing him all the success in the world for the coming year. The president-elect thanked the boys for intrusting him with the office and pledged his best efforts in making 1928 a huge success.

Tom Pierson proved himself very entertaining with his many stories and monologues, which consumed the remaining time of the meeting.

Construction of Pattern for Oil Funnel, Avoiding Triangulation

In Response to Inquiry of J. Albert Murphy, Flat River, Mo.

By O. W. KOTHE, St. Louis Technical Institute

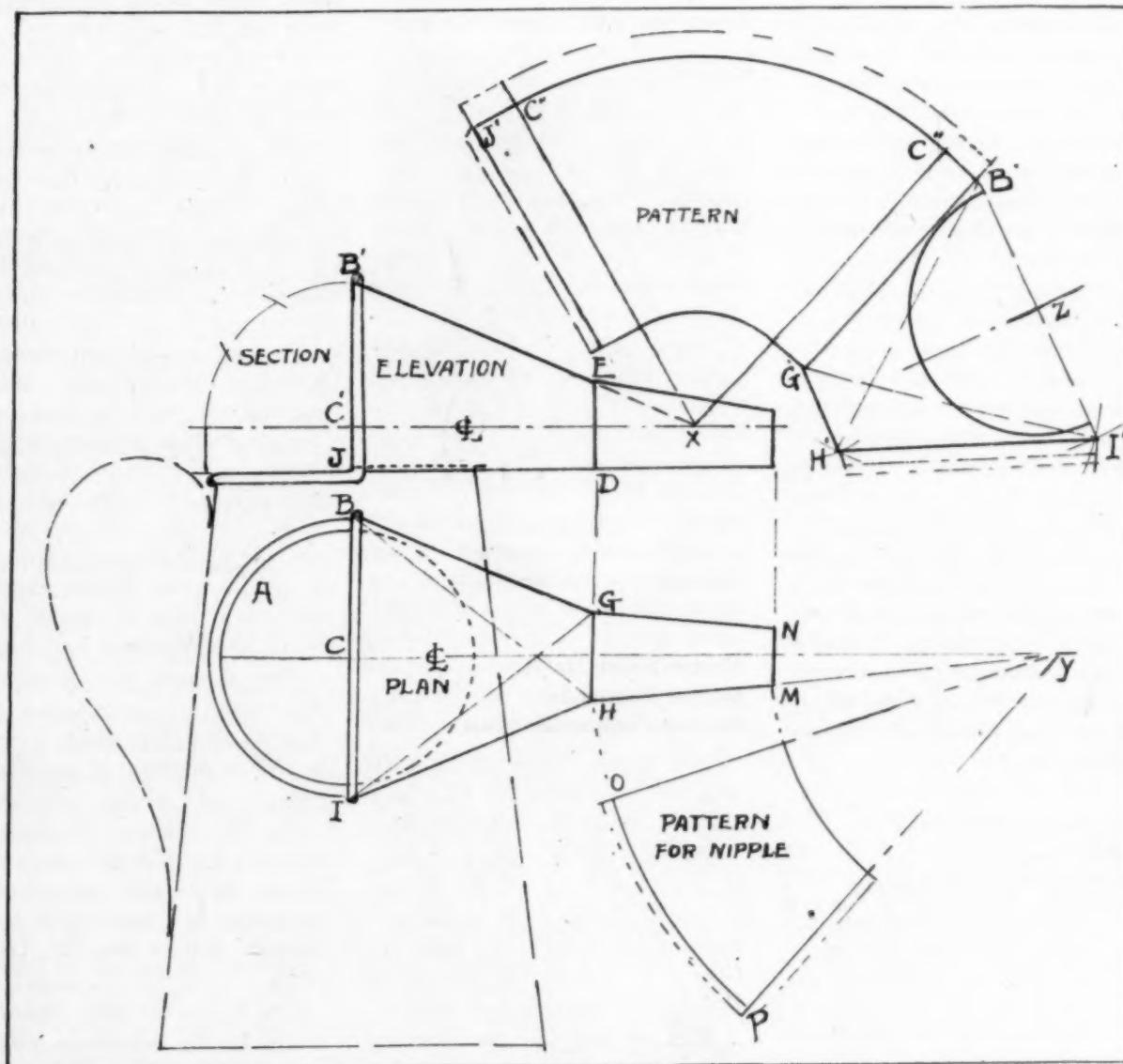
RESPONDING to the inquiry of J. Albert Murphy, proprietor of Murphy's Tin Shop, Flat River, Missouri, for a development for an oil funnel attached to a gallon measure, I will say, the accompanying drawing gives a simple, convenient way to get at it, to avoid the use of triangulation. Here the bottom is flat, and the top part is an ordinary semi-funnel with a

small straight piece, as C'-J.

To develop this problem, it is first necessary to know the size of the gallon measure. For this it is best to copy one of those you have around the place. Then describe the part plan, giving the width as B-I as section A. Next measure the length you desire the funnel as G-H to extend, and draw this diameter, or possibly $\frac{3}{4}$ -inch, or 1 inch

in diameter.

Next draw the side lines to pass the section A slightly, and then you can add the nipple, as M-N, making it possibly $\frac{1}{2}$ to $\frac{5}{8}$ inch in diameter. From this you can draw the elevation, measuring the diameter of small end of funnel, as D-E, to correspond with G-H, and then pass a center horizontal line through it. Now pick the half



Patterns for Oil Funnel

diameter C-B from the plan, and set as C'-B' of elevation, which will give you the same flare for the top. Draw line to E and extend to apex X.

The section for C'-B' is a semi-circle, and is indicated by the section, which is a half view looking into the funnel. So to develop the funnel part, you use X as center, and B' as radius, strike an arc. On this, measure off the girth as C"-C', which must correspond to the sectional spaces, or the half circumference of a circle having the diameter of B'-C' of elevation. When lines C"-X are drawn, then add the straight part C'-J of elevation on both sides as C"-J' and C"-B'. Draw these lines parallel to the radial lines C"-X, and then add the bottom of plan. This can be reproduced by spanning the dividers in a diagonal way as the lines indicate, and transferring them in pattern. This gives points I' and H', which enables drawing the outline. The center Z is located and the semicircle is cut out to fit the top of measure, and this is all there is to the funnel part.

The pattern for nipple is developed the same as any tapering pipe, extending the side lines to apex Y. Then using this as center, we describe the pattern. Make the girth P-O equal to the circumference that diameter G-H requires. This nipple must be bent so it conforms with the shape of funnel end; but this can easily be done with a pair of pliers. This, of course, is not an accurate pattern, but it is small, and can easily be shaped so it hardly pays to develop a more accurate pattern for the nipple. Laps for assembling and wiring must be allowed extra.

Detroit Sheet Metal and Roofing Contractors Hold Their Annual Meeting

Many successful annual meetings have been held by this association, but none have ever compared to the successful event of Tuesday evening, January 10th, at the Book Cadillac Hotel. Even optimistic President Bill Busch was surprised

when he found it necessary to have an extra table set up for the overflow. During an unusually good meal, entertainment was furnished by a ladies' band, assisted by a male trio. State President Harry Rhodes was introduced and gave a very interesting talk on association work. Secretary Frank Ederle was next called upon and he gave a review of the activities of the state association for the past year. Local Treasurer E. G. Bush gave his annual report, which showed that the association was in a very healthy financial condition. Secretary Sullivan, in his annual report, gave a general review of the accomplishments of the association. Frank Dempsey, chairman of the nomination committee, was next called upon for his report. It was as follows: President, Wm. W. Busch; vice-president, Al. Berschbach, Jr.; secretary, Wm. P. Sullivan; treasurer, E. G. Bush; directors, Robert Candler and R. Ahern. A motion was then made by Al. Berschbach, Sr., supported by Nick Schwenter, that the rules be suspended and the secretary cast one ballot for the suggested nominees. The motion was unanimously carried.

Just as the meeting was about to adjourn, Bill Sullivan arose and presented President Bill Busch with a beautiful Gladstone traveling bag in appreciation of his untiring efforts during the past year. Following this, the meeting adjourned and a social session consumed the remainder of the evening.

Master Sheet Metal Men of Wisconsin Discuss Convention Plans

The Master Sheet Metal Contractors' Association of Wisconsin held its regular monthly meeting.

The meeting was called to order by President Tolg. Those present were: C. Tolg, A. Schumann, P. Biersach, A. Goethel, R. Jeske, H. Gehrke, C. Pansch, N. Ording, A. Podolske, F. Reinick, L. Reinke.

The minutes of the previous meeting were read and approved.

A letter from Geo. Harms, chair-

man of the committee preparing the Trade Development Book, was read. Herein he asked for support of their project. Mr. Paul L. Biersach, national president, gave a very interesting talk on the merits of the book, with an earnest appeal for the members to send in their orders. A general discussion ensued wherein enthusiastic support was offered. Some wrote out their orders at once, and others promised to see to it that they would be sent in shortly. This would also be taken up at the various locals for action. Mr. C. Pansch promised that the Racine Local would be in back of this project 100 per cent as soon as they have their next meeting.

Mr. Markle's letter, sent to those to whom subscription to the National Sheet Metal Contractor had been awarded, was then read. All expressed their pleasure at the good letter written. A general discussion on this subject ensued for the best means of following up this campaign for membership. At the present it was thought that a good letter of invitation to our convention would be about the best. For the convention a committee would be chosen to look after this matter.

The convention committee reported on the progress made in preparations for the convention. The program as prepared was presented for their approval and suggestions, and criticisms asked. With a few minor changes in wording, the program was warmly approved, and the thought expressed that the coming convention would be the best Wisconsin has ever had.

The secretary was instructed to write some of the auxiliary members to stop the usual side-room parties so prevalent at past conventions.

On Mr. Ording's motion, seconded by Mr. Gehrke, a registration fee of \$2.50 was placed, with a stipulation that reservation for the banquet must be made by Tuesday noon.

On motion by Mr. Jeske, seconded by Mr. Ording, a vote was cast to refuse delinquent members attendance into the banquet hall.

Copper & Brass Research Helping to Build Public Appreciation

Of the Sheet Metal Industry— Much Good Work Already Done

By HARVEY A. CALL*

THE Copper and Brass Research Association is endeavoring to do so much constructive work helpful to the sheet metal industry and to sheet metal contractors that it was a task for me to decide which of the many angles of our effort would be most interesting to you. So here at the start I am going to confess that but a few of the high spots have been selected for the time at my disposal.

Naturally the highest spot in any organization of this kind is the attitude of the guiding spirit. And there, gentlemen, every member of our organization feels very proud, for W. A. Willis, Manager of the Copper and Brass Research Association, is a level going, broad-minded gentleman keenly alert to the needs of the industry and the effectiveness of team work along sound economic lines. I think you will get a clearer picture of the importance of the guiding spirit of our organization when I tell you that the Copper and Brass Research Association is and has always been more interested in seeing copper, brass and bronze used properly where they should be used than it has been in struggling for tonnage of copper sales.

Giving Specific Examples

And here I think it is worth while to cite a specific example of how that policy acts to build prestige for the sheet metal industry. About two months ago we had some photographs taken of a copper faced marquee 330 feet long and extending around two sides of the Innes Building at Wichita, Kansas. (See

AMERICAN ARTISAN, January 21, 1928.) A little over a ton of copper was used by The American Cornice Works Company in making the face panels, return moulding and decorative runner on that job.

Here is the picture I want to bring to your mind, as it relates to our policy of being most interested in seeing copper used properly. All of us know that for a purpose of that sort copper will go on for scores of years without repairs,



Harvey A. Call

without paint, without deterioration—the only appreciable change being that the copper work gets more beautiful as it ages in the weather if the job has been properly done. Yes, how long the copper work on that marquee remains beautiful depends very, very largely on whether or not it was properly erected. (And here I am glad to digress and tell you that it was properly erected.)

The Innes Building stands on a prominent corner of Wichita's principle business street. Both street sides of the building under the marquee are expanses of plate glass interspersed with columns of the finest polished granite. So the

copper work of the sheet metal artisan is there, as in thousands of other instances, a very prominent feature in an environment of beauty, grace and permanence as expressed in the best type of architectural design. And it is truth when I tell you that not a soul with eyes to see passes that building without remarking the substantial beauty of the copper work on that building.

How Association Has Helped Architects

Copper erected in that fashion is a prestige builder for the sheet metal industry for scores and scores of years. The Copper and Brass Research Association has consistently worked to the end that architects, builders and owners might know that copper properly erected by the skilled sheet metal artisan lends a beauty which adds dignity to even the most luxurious surroundings and gives a permanence which is seldom excelled by the useful life of the structure on which it is placed.

Here again I want to digress and tell you that sheet metal contractors all over the country have rapidly assimilated the spirit of doing copper work well. One sheet metal contractor some months ago told me he had over 400 salesmen out working for him night and day. They were all well done copper jobs. Recently I learned from another contractor that he collaborates with architects to devise copper gutters and downspouts specially designed to harmonize with the exteriors of the building being planned by those architects. Incidents and practices similar to these are without number. To me they represent the aggressiveness with which the industry has grasped the necessity of giving the greatest

*Address by Harvey A. Call, Mid-Western representative of the Copper and Brass Research Association, Landreth Building, St. Louis, delivered at the convention of the Indiana Sheet Metal Contractors' Association, Denison Hotel, Indianapolis, January 24 to 26, 1928.

permanence to sheet metal work and their acceptance of copper as the proper medium of doing it. That combination is constantly building prestige for the sheet metal industry.

In back of the policy of being more interested in seeing copper, brass and bronze used properly wherever they should be used, all the resources of the Copper and Brass Research Association have been concentrated.

Research Work Very Extensive

To achieve that purpose the association maintains a research department which investigates new and existing uses of copper, brass and bronze. It maintains a building service department which cooperates with builders and contractors and assists prospective builders and buyers of homes in solving the vexing problems which confront them. It advertises in the daily newspapers of the key cities of the country, in national magazines and trade and technical publications. It supplies, without cost or obligation, to contractors and architects manuals of instruction on approved methods of using copper for roofing, flashing and brass pipe for plumbing. It publishes and distributes the *Copper and Brass Bulletin*, about 30,000 copies per issue. It supplies to home owners and prospective home owners attractive educational literature on copper, brass and bronze in the real home, brass pipe for plumbing, copper and bronze screens, hardware, electric wiring and on many other allied subjects. And it passes along, every evening, to the offices of the National Association of Sheet Metal Contractors all of the sheet metal sales leads developed by its extensive advertising to and its direct contact with the public with which you men are daily doing business.

You are all familiar with copper and its ability to give utmost permanence to the work of the sheet metal artisan. Many, possibly all of you, recognize well done copper jobs as builders of good will and prestige. You all know that the

well done copper job impresses all the neighbors with the futility of corrugated sheet metal work while its appearance, durability and satisfactory service make a loyal friend of its owner. With these facts in mind, the influence of the work of the Copper and Brass Research Association toward building prestige for the sheet metal industry will be more clear when I tell you that part of the 1928 publicity of the association will consist of advertising appearing, during the winter and spring months, in approximately 200,000,000 copies of newspapers in the leading cities through the United States; in national magazines and in trade and technical publications. The thought I want to leave with you is that this huge publicity directs the attention of the building owners, buyers or builders to copper and the excellence of the service given by copper work. That stimulates appreciation of copper service and makes copper jobs more effective as builders of good will and prestige for the sheet metal industry.

Branch Offices Speed Up Work

Along with all this, branch offices of the association have been established in St. Louis, serving the Middle West, and at Los Angeles, serving the coast. These, with our home office at 25 Broadway, make it possible to promptly give the public—your customers—any information about copper, brass or bronze which they request. This service, extended as it has been, works to build prestige because all requests for information are handled with courtesy and dispatch. It is free to architects and contractors and the public. In itself it has grown to be a valuable contribution toward building good will and prestige for your industry.

Our copper roofing manual and handbook on copper flashings are familiar to most of you. Both of these are in their third edition so that 40,000 of them are being used by architects, builders and sheet metal workers throughout the country. Compiled, as they were, with

the assistance of many prominent sheet metal contractors and based on the best practice of their experience, these books have done much to standardize the design of flashings and roof work. Directly they are responsible for better copper work, and good copper jobs are always prestige builders for the industry.

Bulletin Also an Aid

The *Copper and Brass Bulletin* is also a medium of great importance to your industry. In it are shown many of the countless thousands of copper jobs which illustrate the harmony wrought by the skill of the sheet metal artisan and the permanence and beauty which is characteristic of copper work. By pictorial presentation and terse descriptive matter the message of the sheet metal industry is forcefully brought home to the 40,000 or 50,000 readers of the *Bulletin*—nearly all of whom are in some way interested in building operations or maintenance of buildings. Foremost among mediums of its kind; enriched with messages about metals which are fundamentally right and correct for the best sheet metal practice, every issue of the *Bulletin* does its full share of good will and prestige building for the sheet metal industry.

Among our other activities the research experimental work initiated and supported by our association and being carried on under our general supervision at the Bureau of Standards, Washington, D. C., is of great importance to the sheet metal industry. Practically all of this work at the Bureau of Standards is being done with sheet copper to determine the facts about the proper size of sheet to use for copper roofings and gutters; the best method of fastening sheets; relative strength of soldered seams; studies of failure phenomena and of gutter, leader and outlet design; physical properties of sheets of various thicknesses; strength of corrugated sheets when used for roofing; also to gather as much data as we can on the action, movement, strength and general characteristics of sheet

copper roofing when exposed to weather and temperature variables.

This experimental research work has been going forward for the past three years. The results so far are very encouraging. Much information of value has been developed. More of equal importance and interest will be developed. All of it, when thoroughly proven and checked as to accuracy, will be released for the information and advantage of the sheet metal industry and all others interested in building and building operations.

So far I have briefly sketched for you a general outline of our activities. While its purpose, that of selling more copper, is selfish, it does help the sheet metal industry and it is our definite policy to extend our help to you in every way we can. We want to work with you; we want you to know and to feel that we are working with you; and we want you to feel entirely free to call on us as often as you care to for any information you may need about copper, brass or bronze.

Milcor Holds 1928 Sales Convention at Milwaukee

*Many Inspirational Talks Were Heard—
New Men Fraternize With Old*

THE 1928 convention of the sales representatives and branch executives of the Milwaukee Corrugating Company was held on January 3, 4, 5, 6 and 7 at the home office, Milwaukee, Wisconsin.

Sessions of the convention were devoted to instruction and discus-

five divisions in which he directs sales—architectural sheet metal, metal ceilings and siding, ventilators and skylights, metal shingles and metal tile roofing, and metal windows. E. H. Jones, Manager of the fireproof material department, had charge of the sessions

the Milwaukee Corrugating Company being one of the largest distributors of this famous iron. Bennett Chapple, D. M. Strickland and G. W. Breiel of The American Rolling Mill Company were on hand with interesting talks on the Armco merchandising plans for the coming year.

F. A. Dale, the Milcor Sales Promotion Manager, who has recently joined the Milcor organization, outlined his plans for sales promotion for the coming year.

On Friday evening, January 6, the annual Milcor sales banquet was held at the Wisconsin Club. A. J. Luedke, Secretary and Assistant Treasurer of the Milwaukee Corrugating Company, was toastmaster. Short inspiration talks were given by President Louis Kuehn and by Vice President and General Sales Manager J. H. Christman. The address of the evening was given by L. D. Stocking, a character analyst, who talked on "Size Up Your Buyer—and How."

Movies of the 1927 Milcor sales convention, taken personally by Mr.



Group of Salesmen and Executives of the Milwaukee Corrugating Company During Recent Sales Convention Held in Milwaukee

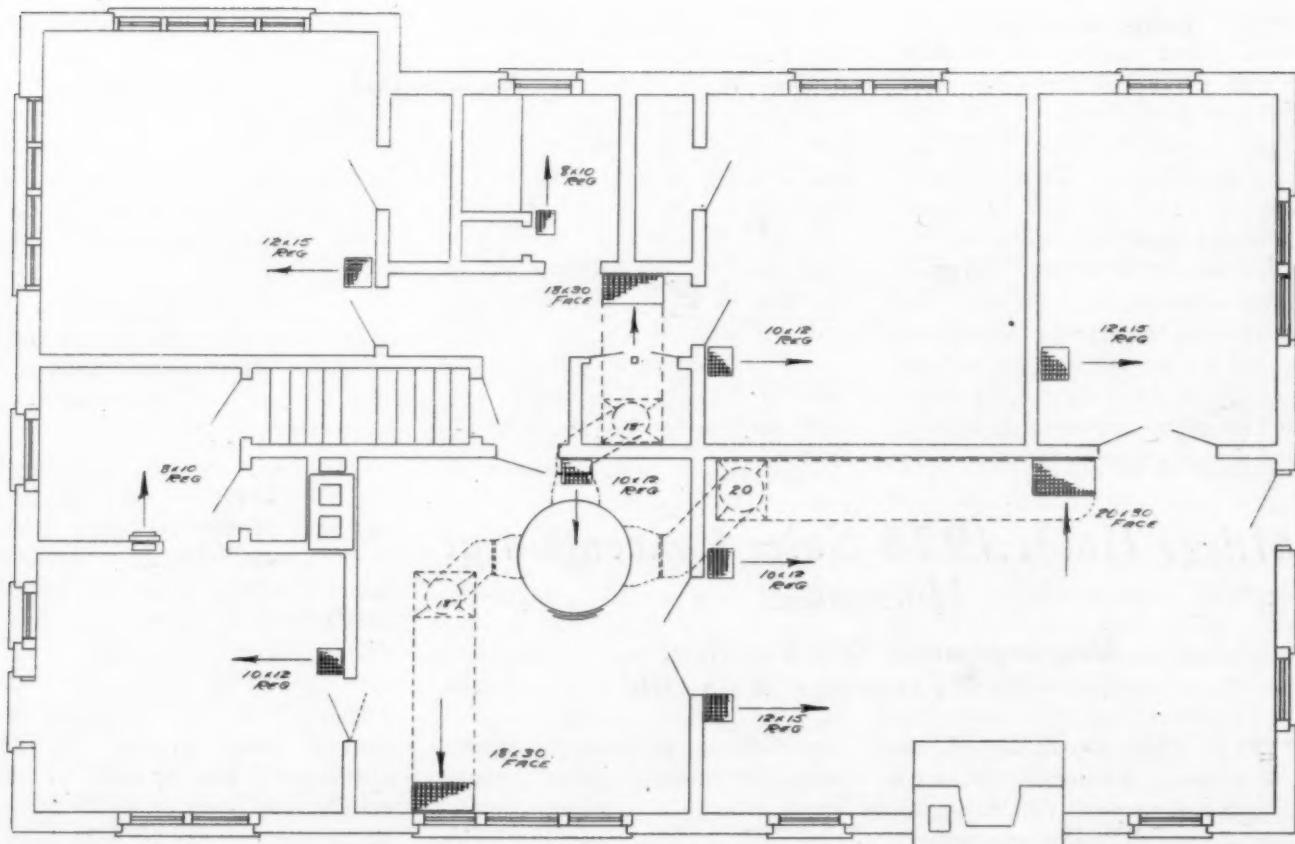
sion on each of the eight major manufacturing divisions of the Milwaukee Corrugating Company. The sessions devoted to products of the heating division were led by L. H. Soper, Manager of the furnace pipe and fittings, stove pipe and elbows department. R. S. Schmieder, Manager of the ceiling, shingle and cornice department, had charge of the sessions on products of the

on Milcor metal lath, corner bead and other Milcor fireproof building products. J. H. Christman, Vice President and General Sales Manager of the company, led the sessions devoted to general line products, including corrugated roofing, sheets, eaves trough, conductor pipe, trimmings, etc.

One half day of the convention was devoted to Armco ingot iron,

Luedke, and a film showing the Dempsey-Tunney fight were shown by Mr. Luedke.

The convention was voted a huge success. Besides creating selling and co-operative inspiration for all, the convention made the new men in the Milcor organization acquainted with their co-workers and made the old members better acquainted with each other.



Showing Correct Method of Distributing the Cold Air Returns to the Furnace

Incorrect Location of Cold Airs One Cause of Faulty Circulation

Distribution of Cold Airs Must Be as Equal as Possible

UP to this time very little has been written relative to locating return air registers, although it is a recognized fact that poor return air systems are responsible for the failure of many heating plants, according to the December issue of the Gas Draft, the Meyer Furnace Company publication.

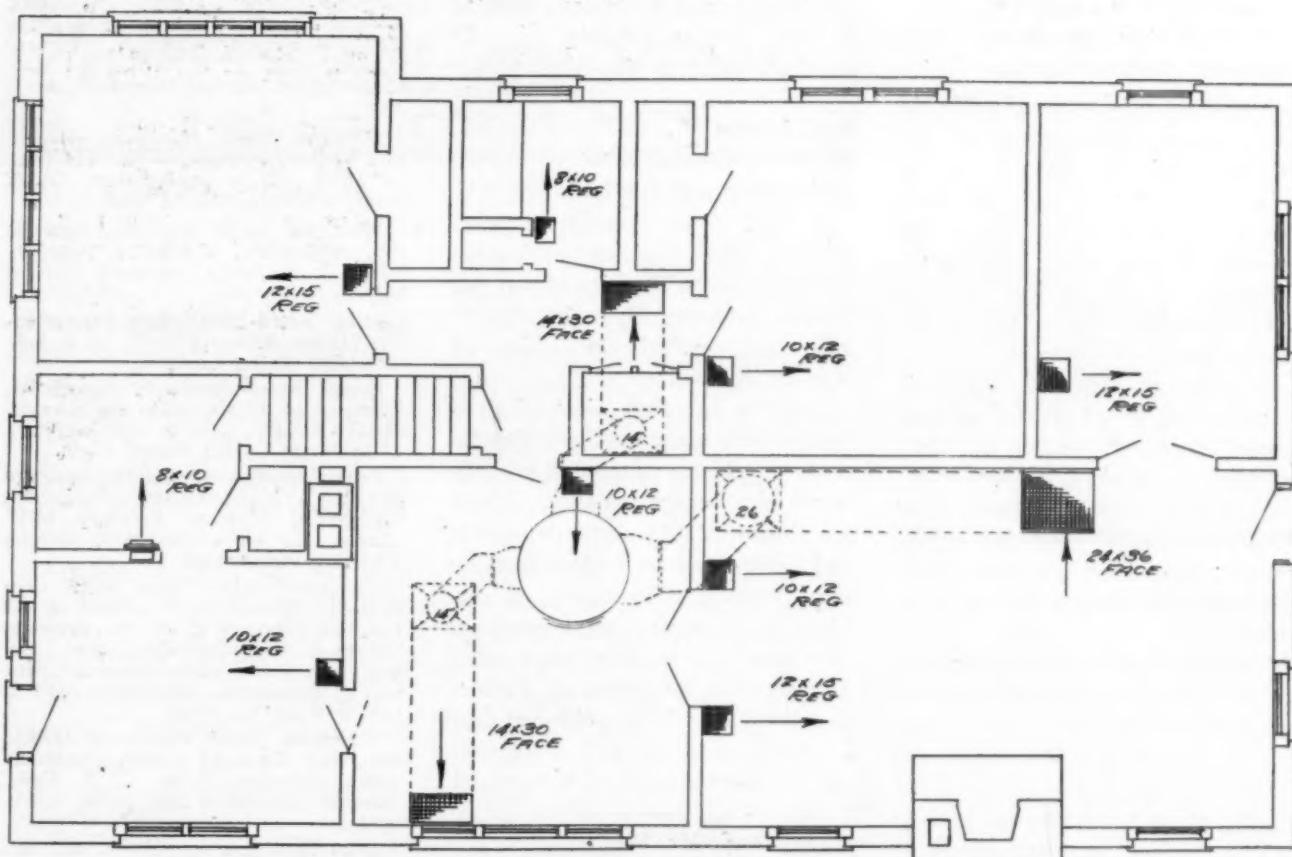
"Of course we all know that the combined area of the return air ducts should be at least equal to the combined area of warm air pipes; also that 10 to 20 per cent excess of area of all warm air pipes to allow for friction and resistance in ducts is very good practice.

"Knowing the correct or required area, the next step is to properly locate register faces or grills so as to permit the free flow of this amount

of air back to the furnace. As previously pointed out herein, there is little published information on the subject of properly locating return air registers, and so it is left up to the designer, contractor and installer to use good judgment in determining the proper locations of these faces.

"With it being common practice to use one or more return air openings and ducts, particular care should be taken on the single register and duct jobs, because the entire performance of a job in such case depends upon the one return air duct, and it should be so centrally located that all return air from various rooms will readily find its way to this single opening, and back to the furnace with the least amount

of resistance. Of course, a system of two or more return air ducts is desirable, as the air can be taken from several points in the building and delivered or distributed equally around the furnace casing; thus also eliminating floor drafts to a minimum. But here again considerable thought should be given to properly locating the register faces, and to see that they are properly proportioned. Take, for instance, a six or seven room house having three return air ducts; each should be so located as to take care of approximately two of the rooms, and the area of the ducts should be as nearly equal as possible or approximately 10 per cent in excess of the warm air piping. For example, it would not be good practice to have



Illustrating the Incorrect Method of Apportioning the Cold Air Returns. The Total Number of Square Inches of Cold Air Area Remains the Same in Both Correct and Incorrect Layouts

one of the ducts taking care of two rooms and handling two-thirds of the air supply to the furnace while the other two ducts took care of the remaining four or five rooms, but only one-third of the air supply. Such a job would not be considered balanced, and herein lies the secret of a successful or unsuccessful system.

"The accompanying sketches serve to better explain the proper proportioning and locating of return air registers and ducts."

Referring to the two illustrations presented herewith representing correct and incorrect procedure in locating the cold air ducts, we see what has been done in regard to relocating the cold air returns.

In the plan marked "incorrect way" there are three cold air returns, but for some reason or other the installer deemed it necessary to have a 24x36-inch face, two 14x30-inch faces, and one 26-inch and two 14-inch round ducts, respectively. This arrangement proved to be an unequal division of the cold air.

Therefore the system was rearranged, changing the 24x36-inch face to a 20x30-inch face, and the 26-inch duct to a 20-inch duct. The two 14x30-inch faces were changed to 18x30-inch and the two 14-inch ducts were changed to 18-inch ducts. In this way the cold air has not been increased, but the distribution has been changed to draw it more evenly from all parts of the house.

From this it is seen that, although a man may have the correct amount of cold air returning to the furnace, his distribution of the cold air faces may be such as to produce a sluggish or uneven circulation.

"Furnace Explodes," Says Newspaper, but It Was a Boiler Instead

Here's a man who not only lost out on a deal of trading his home for another, but suffered material damage to the extent of \$1,200, to say nothing of the narrow escape from injury to his family, all because he had a steam boiler instead

of a warm air furnace in his basement.

R. H. Vandevelde, 113 Market Street, Dyersburg, Tennessee, calls our attention to an article that appeared recently in the *Memphis Commercial Appeal* under the heading, "Furnace Explodes; Partly Wrecks Homes." After telling all about the details of the accident, mentioning a furnace several times, the writer of the article gives the cause as follows: "The fire department was called out following the explosion. Damage was estimated at \$1,200." Now here comes the secret of the whole story: "It is believed the explosion was caused by the low level of the water in the boiler."

So in the first place it wasn't a furnace at all that exploded; it was a steam boiler, but evidently the news reporter did not know the difference. Because of his ignorance the public of Memphis, Tennessee, is led to believe that a furnace is unsafe because it is apt to explode at any time.

**Richardson & Boynton Co.,
New York City, Introduce
"Colored" Square Furnace**

There has been a great deal said and written recently about the necessity for the greater use of color in connection with the marketing of warm air furnaces. The thought is that warm air furnace installers are not making use of a very important ally, color, in the sale of warm air furnaces.

In order to assist the warm air furnace installer to greater sales by means of the introduction of colors in warm air furnace casings, Richardson & Boynton Company, New York City, have produced a new square cased warm air heater with the additional feature that it is in color.

The idea back of the whole thing in the production of this colored furnace, a bright blue, is to clean up the basement, rid it of the old dingy looking iron heater and put in its place an attractive heating system that will bear the closest of scrutiny with the other furniture in the home. In other words, appeal to the public with color.

The Richardson & Boynton Company are making a very attractive offer in introducing this new furnace, and every warm air furnace installer should avail himself of the opportunity to find out what that offer is by writing to them immediately for complete details. The introduction is called "A Bright Spot in Heating History." Do not neglect to investigate this departure from the accepted course in warm air heating. It means a great deal to you in the way of increased sales.

**Follansbee Brothers Co.
Add Two Men to
Milwaukee Sales Force**

Follansbee Brothers Company, Pittsburgh, Pennsylvania, have added two salesmen to their Milwaukee branch, according to H. H. Wherry, District Manager.

Walter Diedrich will travel in the southern part of Wisconsin and northern Illinois, while George Hess will give the company similar representation in the city of Milwaukee and its suburbs. A material in-

crease in business has been enjoyed by this company during the past year, according to Mr. Wherry.

**Initial Issue of
Premier Pictorial Both
Interesting and Instructive**

A copy of the *Premier Pictorial*, the very interesting little publication launched by the Premier Warm Air Heater Company, Dowagiac, Michigan, has reached the office of *AMERICAN ARTISAN*.

True to its name, pictorial, it is replete with many excellent illustrations on subjects of interest to every warm air furnace installer. There are stories on sales methods, stories and illustrations on furnace installation practice, illustrations of displays at fairs, and shop windows. The issue also contains many other helpful hints for warm air furnace installers. It will be published once a month, and is well worth the twelve minutes required for perusal.

**Thank You, Mr. Ritz.
We Appreciate
the Compliment**

Mr. Chas. E. Kennedy,
% THE AMERICAN ARTISAN,
Chicago, Illinois.

My dear Kennedy:

I apologize for this late acknowledgment of the receipt of the *AMERICAN ARTISAN*, which you so kindly sent me, gratis.

I want to say that the *AMERICAN ARTISAN* has been responsible for revamping the warm air installation in my new home, which is at present under construction, as I gained a few new ideas from the magazine which I have incorporated in my present plans.

Thanks again, and if I can be of any service to you, in any way, please do not fail to call on me.

Dayton, O. CLEVE W. RITZ.



Indiana Retail Hardware Association, Indianapolis, January 31 to February 3. The Claypool Hotel will be convention headquarters and meeting place. G. F. Sheely, secretary, 911 Meyer-Kiser Bank Building, Indianapolis.

Master Sheet Metal Contractors' Association of Wisconsin, Republican Hotel, Milwaukee, Wisconsin, February 6 and 7, 1928. L. F. Reinke, 514 Market Street, Milwaukee, Wisconsin, secretary.

Michigan Retail Hardware Association, Detroit, February 7-10. The Statler Hotel will be headquarters. A. J. Scott, secretary, Marine City.

Wisconsin Retail Hardware Association, Auditorium, Milwaukee, February 7-10. P. J. Jacobs, secretary, Stevens Point.

Iowa Retail Hardware Association, Des Moines, February 14-17. A. R. Sale, secretary, Mason City.

Illinois Retail Hardware Association, February 14, 15 and 16, at the Sherman Hotel, Chicago. Leon D. Nish, secretary. 14-16 North Spring Street, Elgin.

Pennsylvania and Atlantic Seaboard Hardware Association, Philadelphia Commercial Museum, February 14-17. Sharon E. Jones, secretary, Wesley Building, Philadelphia.

Carolinas-Virginia Sheet Metal Contractors' Association, Charlotte, North Carolina, February 15 and 16. Secretary George I. Ray, Charlotte, North Carolina. Convention headquarters at Chamber of Commerce. Convention will be held in Hotel Charlotte.

Minnesota Retail Hardware Association, New Municipal Auditorium, Minneapolis, February 21-24. C. H. Casey, manager, Nicollet at 24th Street, Minneapolis.

Ohio Hardware Association will hold its 1928 convention and exhibit at Toledo, February 21-24. James B. Carson, secretary, 411 Mutual Home Building, Dayton.

South Dakota Retail Hardware Association, Coliseum Building, in Sioux Falls, February 27, 28, 29, 1928. Charles H. Casey, Secretary, Nicollet at 24th Streets, Minneapolis.

Michigan Sheet Metal & Roofing Contractors' Association, Kalamazoo, Michigan, March 5, 6, 7, 8, 1928. Secretary, Frank E. Ederle, 1121 Franklin Street, Grand Rapids, Michigan.

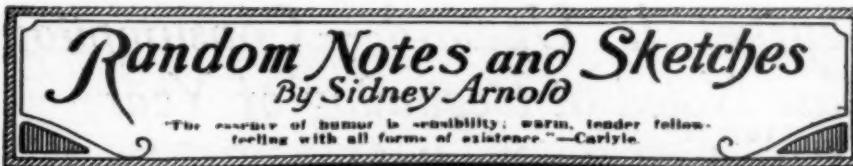
Illinois Sheet Metal Contractors' Association, Fort Armstrong Hotel, Rock Island, April 11 and 12. Secretary Fred J. Graeff, 222 East Washington Street, Springfield, Illinois.

National Warm Air Heating and Ventilating Association, Hotel Stevens, Chicago, Illinois, April 24, 25 and 26, 1928. Secretary Allen W. Williams, 174 East Long Street, Columbus, Ohio.

National Association of Manufacturers of Heating and Cooking Appliances, Hotel Statler, Detroit, Michigan, May 9 and 10. Secretary Allen W. Williams, 174 East Long Street, Columbus, Ohio.

Arkansas Retail Hardware Association, Little Rock, during the month of May, exact dates for the meeting to be determined later. L. P. Biggs, secretary, 815-16 Southern Trust Building, Little Rock.

National Association of Sheet Metal Contractors of the United States, the Ohio Sheet Metal Contractors' Association, joint convention, Hotel Statler, Cleveland, Ohio, May 22, 23, 24 and 25, 1928. J. M. Saunders, 215 Plymouth Building, Cleveland, Ohio, convention chairman.



Druggist: "Here, sir, is your package. Seventy-five cents, please."

Creston W. Barnes, Charlie Glessner's right-hand man (placing nickel on counter): "Thank you. There is your nickel."

Druggist: "But I said seventy-five!"

Creston Barnes (going out the door): "Well, there's your five cents!"

Druggist: "Well go on, you young fool, I made three cents anyway."

* * *

Out of the Mouths of Babes

Lady: "You say your mother is ill today?"

Johnny: "Yessum, sumpin' the matter with her throat."

Lady: "Well, that's too bad. She was well when I visited her yesterday."

Johnny: "Huh! It's your fault, then. Ma said you always give her a pain in the neck."

* * *

"Dear Doc," wrote Bill Busch of Detroit: "What kind of cigars would you recommend as the best throat remedy? I want to become a singer. I've been trying Too-fer-a-nickel Brand, but without satisfactory results."

Answer: "You have it all wrong, Bill Busch. That idea of voice production applies only to cigarettes."

* * *

Since the first issue of *Premier Pictorial* has been in the mail, its worthy editor, our old friend "Buck" Taylor, has been the recipient of much advice. Big hearted "Buck" has passed on to me the following because he says it may help the ARTISAN editor.

Advice to Editors

Expert advice on how to run your paper.*

Dear Editor: How can I increase my circulation?

Answer: Try rubbing yourself with a Turkish towel.

Dear Editor: My machine operator goes off on a spree every couple of weeks and I can't get my paper out on time. How can I stop him from drinking?

Answer: Close his mouthpiece by feeding him bum metal.

Dear Editor: Some of my subscribers don't like my editorials. What had I better do about it?

Answer: Kill 'em.

Dear Heavy Stuff: My wife wants me to print her poetry and she keeps me awake nights reading the drivel. What would you recommend for relief?

Answer: Rock her to sleep. Use a big rock.

* * *

To Be Exact

Noah Webster was once discovered by his wife kissing a pretty maid. "I am surprised, Noah," said his wife.

"No, my dear," Noah replied. "I am surprised. You are astonished."

* * *

Help!

Benedict: "My wife's favorite book before we were married was 'The Three Musketeers,' and we had triplets."

Newlywed: "Good heavens, my wife's favorite was 'The Birth of a Nation.'"

* * *

I had a very pleasant visit on Monday of this week with Peter Kunold, 342 Claim Street, Aurora, Illinois, who came into our office seeking a little information which we were very glad to give him. Mr. Kunold was formerly in the sheet metal contracting business in Omaha, Nebraska, and was well acquainted with the late John H. Hussie. I surely enjoy these visits very much indeed and I hope that other men in the warm air heating and sheet metal business when in Chicago will not hesitate to drop in to see us.

Here's a little poem used for advertising purposes by the C. L. Cross Lumber Company, Chicago.

How Lindbergh Did It

By James W. Foley

Vile udder folks talkin' an' vunderin' how,
An' bane gettin' ready purty soon,
but not now,
By yimminy, Lindbergh, he yumped
up an' vaded
Right out in the air an', by jingo,
he made it.

Vile all of dem fallers vas vatin' on
shore,
By yimminy, Lindbergh, he vaited
no more.
He lifted up his nose an' he lift up
a ving
An' he yump in the air an' he made
it, by ying.

He come from the Vest an' come
purty darn kvick,
An' he yump in the cockpit an' pull
on a stick,
An' before all dem fallers could say
any vord,
He vas up in the air an' vent off
like a bird.

He said dis here vaitin' vas purty
darn dull,
So he yumped in his ship an' he
wave and say, "Skol!"
An' he fly to the north an' the east
an' don't drop.
An' he made it to Paris, by ying, in
one hop!

Ay lak dis man Lindbergh, a dandy
fine kid.
Ay lak him, by yingo, ay lak vat
he did.

Vile dem fallers talkin' just vaited
an' vaited,
Dis Lindebrgh, he yump up, by
yingo, an' made it.

—New York Times.

* * *

W. C. Markle, Secretary National Sheet Metal Contractors: "I'd like to see one of your new cars."

Salesman: "Six or eight?"

Mr. Markle: "Oh, one will do very nicely, for the present."

Trend in Steel Market Is Upward—Consumption Maintains Increase Noted at Beginning of Year

Pig Iron Prices Are Steady—New Business in Nonferrous Metal Market Is Light

STEEL enters a period when consumers are more occupied with working off the heavy tonnages they have been taking in or specifying the past thirty days than they are in making fresh commitments.

Consumption unquestionably is maintaining the rate of increase ushered in with the new year and, save for this easiness in new orders for some products—a condition not uncommon after such brisk contracting—the trend in all departments is up. Steel corporation subsidiaries are up to 83 per cent now, or five points higher than last week.

In steel prices the undercurrent is strongly upward. On bars, plates and shapes all makers now quote \$1 per ton higher, and while the new levels apply only to sales in the remainder of the quarter—a period for which most users are covered—present contracts are made the more attractive. It is reported that another advance of \$1 is contemplated on second quarter business.

Pig Iron

At Pittsburgh the dearth of pig iron buying is more pronounced. Usually in quiet times some inquiries present themselves for attention, but just now nothing is up to test the market.

Consumers continue to take iron due them on contracts. A few single carload or 100-ton sales of foundry grades are noted at \$17.25, base, valley. One seller claims to have received \$17.50, valley, for a small lot of malleable. A valley merchant stack sold 250 tons of bessemer iron at \$17.50, valley, and one lot of 200 tons at the same price. No interest is noted in basic, nominal at \$17, valley. Low phosphorus is unchanged at \$27, valley, for small lots.

The pig iron buying movement

at Chicago is continuing, with considerable second quarter tonnage in sight, as major first quarter needs are being filled. Inquiries for second quarter are becoming active, those for 300 to 600 tons being especially numerous. An inquiry is out from a Chicago melter for 1,000 tons, and another for 1,000 tons for a Milwaukee user. A western Michigan melter placed 1,000 tons of malleable.

The malleable situation is improving slowly. The foundry melt is gaining. Reported small sales to be shipped by boat next season are not disturbing the \$18.50, base, Chicago furnace price, to which leading sellers are adhering. Silvery sales are light. Charcoal iron sales are fairly active at \$24, furnace. It is reported January pig iron shipments may increase 20 per cent over December.

At Birmingham pig iron sales are about equal to production, but shipments fall short. Quotations continue at \$16, base, Birmingham. Indications are that there will be a rush in delivery in February and March.

Copper

Some copper slipped back to 14.00 cents, Connecticut, again, but the quantity obtainable was limited and for early shipment, while nearly all producers held firm at 14.12½ cents. Very little business has been done. Some metal has sold for Midwest delivery at 14.25 cents. Export sales have been more active than domestic, with the price unchanged at 14.50 cents c. i. f. European port.

Zinc

Prime Western zinc sold down to 5.60 cents, East St. Louis, for prompt, and 2½ points more for futures, but business was not large. On Monday the market looked a little firmer. The Joplin ore mar-

ket was unchanged at \$36 a ton with sales larger than output for the first time in many weeks except during the holiday shut-down:

Tin

Prices of tin turned upward several days ago as sharply as they had been going down. Short covering probably was one of the principal factors in the recovery. The Far East continued to sell down for a time, but became stronger on Saturday.

On Monday and Tuesday the Singapore market was closed and that may have been one reason for quietness here. On the other hand, users usually get out of the market when it rises rapidly, and this quietness resulted in a little sagging tendency from the top of the recovery.

Lead

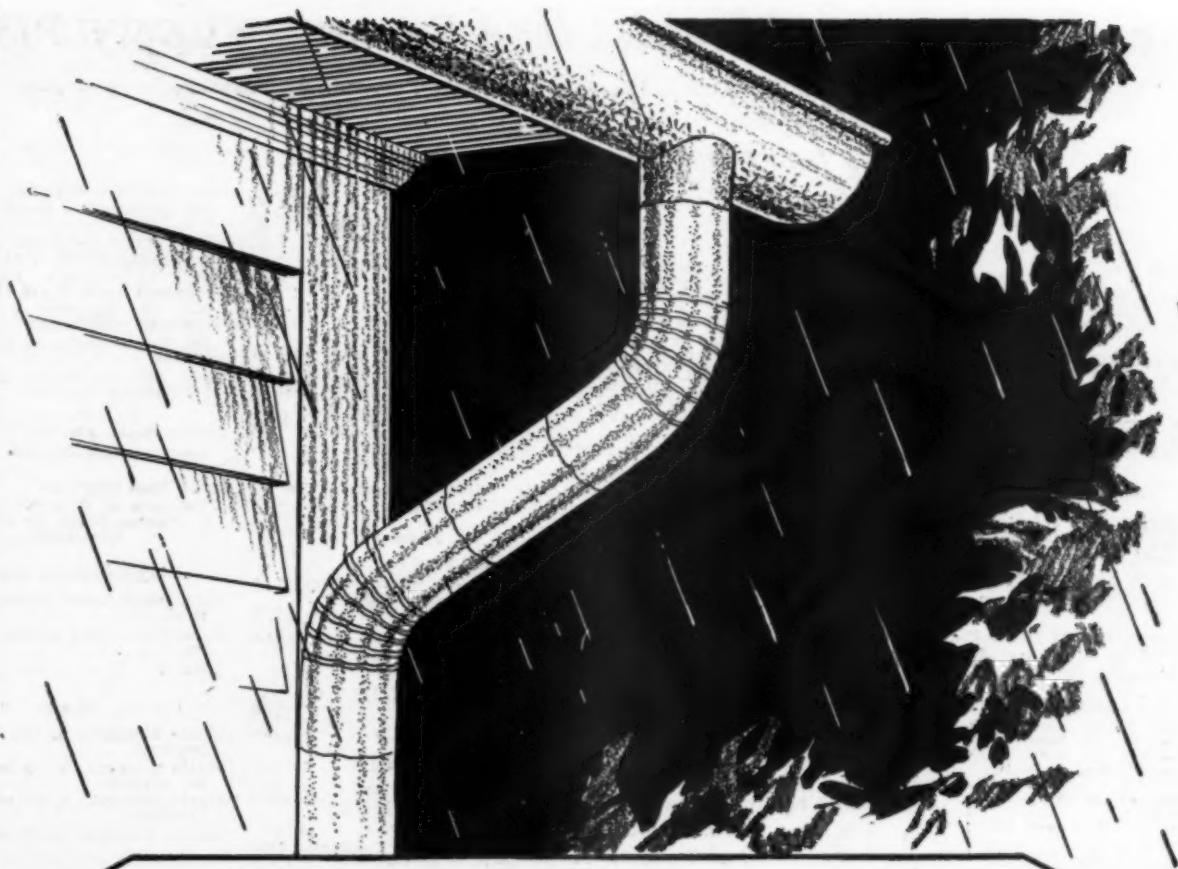
Lead prices are a little firmer, but without much change after some prompt metal went a shade under 6.30 cents, East St. Louis. The market has become active in the past few days, with all classes of users represented for prompt-February shipments.

Solder

Chicago warehouse prices on solder are as follows: Warranted 50-50, \$36.50; Commercial 45-55, \$33.50; plumbers', \$30.50; all per 100 pounds.

Old Metals

Wholesale quotations in the Chicago district, which should be considered as nominal, are as follows: Old steel axles, \$15.50 to \$16.00; old iron axles, \$21.00 to \$21.50; steel springs, \$14.75 to \$15.25; No. 1 wrought iron, \$11.00 to \$11.50; No. 1, cast, \$12.75 to \$13.25, all per net tons. Prices for non-ferrous metals are quoted as follows, per pound: Light copper, 9 cents; zinc, 3½ cents; cast aluminum, 13¾ cents.



LET IT POUR

Lupton Elbows shine when there's a good rainy day's work to do...Q Designed to discharge water quickly and reinforced to resist corrosion where leaves and sewer gas gather, Lupton Elbows pay out in good performance and durability. They are machine-made in one piece—always uniform and perfectly shaped. Specify them to your jobber and learn why they've been leaders for over fifty years.

DAVID LUPTON'S SONS COMPANY
Allegheny Ave. and Tulip St. • Philadelphia

L U P T O N
ELBOWS  THAT FIT

Chicago Warehouse Metal and Furnace Supply Prices

AMERICAN ARTISAN is the only publication containing Western Metal, Furnace Supply and Hardware prices corrected weekly.

METALS

PIG IRON

Chicago Fdy.

No. 1.....\$14.50

Southern Fdy. No. 1.....23.01

Lake Superior Charcoal.....27.04

Malleable.....15.50

FIRST QUALITY BRIGHT TIN PLATES

1C 20x28 112 sheets.....\$25.10

IX 20x28.....29.60

IXX 20x28 56 sheets.....16.20

IXXX 20x28.....17.55

IXXXX 20x28.....18.95

TERNE PLATES

Per Box

IC 20x28, 40-lb. 112 sheets.....\$26.00

IX 20x28, 40-lb. 112 sheets.....28.50

IC 20x28, 25-lb. 112 sheets.....21.75

IX 20x28, 25-lb. 112 sheets.....24.25

IC 20x28, 20-lb. 112 sheets.....20.00

IV 20x28, 20-lb. 112 sheets.....22.50

IC 20x28, 16-lb. 112 sheets.....18.50

IC 20x28, 16-lb. 112 sheets.....18.50

"ARMCO" INGOT IRON PLATES

No. 8 ga. up to and including

1/4 in.—100 lbs.\$4.55

COKE PLATES

Cokes, 50 lbs. base, 20x28.....\$12.00

Cokes, 50 lbs. base, 20x28.....12.80

Cokes, 100 lbs. base, 20x28.....14.00

Cokes, 107 lbs. base, IC

20x28.....14.20

Cokes, 135 lbs. base, IX

20x28.....16.40

Cokes, 155 lbs. base, 56

sheets.....9.20

Cokes, 175 lbs. base, 56

sheets.....10.05

Cokes, 195 lbs. base, 56

sheets.....10.90

BLUE ANNEALED SHEETS

Base 10 ga.....per 100 lbs. \$2.50

"Armco" 10 ga.....per 100 lbs. 4.00

ONE PASS COLD ROLLED

BLACK

No. 18-20.....per 100 lbs. \$2.75

No. 22.....per 100 lbs. 3.90

No. 24.....per 100 lbs. 3.95

No. 26.....per 100 lbs. 4.05

No. 27.....per 100 lbs. 4.10

No. 28.....per 100 lbs. 4.20

No. 30.....per 100 lbs. 4.35

No. 32.....per 100 lbs. 4.45

"ARMCO" GALVANIZED

"Armco" 24.....per 100 lbs. \$6.15

GALVANIZED

No. 16.....per 100 lbs. \$4.30

No. 18.....per 100 lbs. 4.45

No. 20.....per 100 lbs. 4.60

No. 22.....per 100 lbs. 4.65

No. 24.....per 100 lbs. 4.80

No. 26.....per 100 lbs. 5.05

No. 27.....per 100 lbs. 5.15

No. 28.....per 100 lbs. 5.30

No. 30.....per 100 lbs. 5.70

BAR SOLDER

Warranted

50-50.....per 100 lbs. \$24.50

Commercial

45-55.....per 100 lbs. 31.50

Plumber.....per 100 lbs. 28.50

ZINC

In Slabs.....\$ 8.50

SHEET ZINC

Cash Lots (800 lbs.).....\$12.00

Sheet Lots.....13.00

BRASS

Sheets, Chicago base.....17 1/2 c

Mill base.....18 c

Tubing, seamless base.....20 1/2 c

Wire, base.....18 1/2 c

Rods, base.....18 1/2 c

COFFEE

Sheets, Chicago base.....22 1/2 c

Mill Base.....21 1/2 c

Tubing, seamless base.....22 1/2 c

Wire, No. 8, B & S Ga.....18 1/2 c

Wire, No. 10, B & S Ga.....19 c

Wire, No. 11, B & S Ga.....19 1/2 c

Wire, No. 8, B & S Ga. and

heavier.....18 1/2 c

LEAD

American Pig.....\$7.30

Bar.....8.30

TIN

Pig Tin.....per 100 lbs. \$62.00

Bar Tin.....per 100 lbs. 63.00

ADAMS' SHEET METAL

ADAMS' SHEET METAL

7 inch, doz.....\$ 1.60

8 inch, doz.....2.20

9 inch, doz.....2.60

10 inch, doz.....2.80

12 inch, doz.....3.50

14 inch, doz.....5.00

DIGGERS

Post Hole

Iwan's Split Handle

(Bureka)

4-ft. Handle.....per doz. \$14.00

5-ft. Handle.....per doz. 36.00

Iwan's Hercules pattern,

per doz.14.90

EAVES TROUGH

Galv. Crimpedge, crated 75 & 15

Zinc, "Barney"50%

ELBOWS

Conductor Pipe

Galv. plain or corrugated,

round flat Crimp.

28 Gauge.....50%

26 Gauge.....45%

24 Gauge.....15%

Galv. & Torna Steel

Plain Rd. and Rd. Corr.:

28 Ga.50%

26 Ga.45%

24 Ga.15%

Square Corrugated

No. 38 Gauge.....50%

26 Gauge.....35%

Portico Elbows

Standard Gauge Conductor Pipe,

plain or corrugated.

Not nested

70 & 5%

Nested solid

70 & 5%

Sq. Corr. A. & B. & Octagon

28 Ga.50%

26 Ga.35%

Portico

1", 1 1/4", 1 1/2".....45%

Copper

16 oz. all designs.....50%

Zinc—

All styles50%

ELBOWS—Stove Pipe

1-piece Corrugated. Uniform Blue

"Milcor" No. 38 Gauge. Uniform

Blue.

5-inch\$1.05

6-inch1.20

7-inch1.75

Special Corrugated

6-inch\$1.00

7-inch1.60

ADJUSTABLE—Uniform Blue

"Milcor" No. 38 Gauge. Uniform

Blue.

5-inch\$1.65

6-inch1.75

7-inch2.10

WOOD FACES—50% off list.

SMOKE PIPE

726-6-12 1/4% (100 rods)....\$28.62

1948-6-14 1/4% (100 rods)....43.62

FILES AND RASPS

Heller's (American)50-10%

American60-10%

Arcade50%

Black Diamond50%

Eagle50%

Great Western50%

Kearney & Foot50%

McClellan50%

Nicholson50%

Simonds50%

FIRE POTS

Clayton & Lambert's

East of west boundary line of

Province of Manitoba, Canada,

No. Dakota, So. Dakota, Ne-

braska, Kansas, Oklahoma, Am-

arillo, San Angelo and Laredo,

Texas.

West of above boundary....45%

Geo. W. Danner Mfg. Co. Ba.

No. 02 Gasoline Torch, 1 qt.\$ 5.55

No. 0250, Kerosene, or Gasoline Torch, 1 qt.7.50

No. 10 Tinner's Furn.

Square tank, 1 gal.12.00

No. 15 Tinner's Furn.

Round tank, 1 gal.12.00

No. 21 Gas Soldering Furn.

.....1.00

No. 110 Automatic Gas

Soldering Furnace10.50

Double Blast Mfg. Co.

Gasoline, Nos. 25 and 35....60%

Quick Meal Stove Co.

Vesuvius, F. O. B. St. Louis 30%

(Extra Disc. for large quantities.)

GALVANIZED WARE

Pails (Galv. after made).

18-qt.\$3.12

Tubs (Galv. after made).

No. 1.6.00

No. 2.6.50

GLASS

Single Strength, A, 25-in.

brackets87%

Single Strength, A, 34 to 40-in.

brackets86%

Single Strength, A, all other

brackets89%

Double Strength, A, all sizes. 88%

HANGERS

Conductor Pipe

Milcor Perfection Wire....15%

Milcor Triplex Wire....10%

Eaves Trough

Milcor Steel (galv. after forming) List....plus 12 1/2%

Milcor Selflock E. T. Wire,

Listplus 50%

HOOKS

V. & B. No. 1, each....\$0.26

CONDENSER

"Direct Drive" Wrought

Iron for wood or brick..15%

HAY

V. & B. No. 1, each....\$0.26

HUMIDIFIER

"Front-Rank" Automatic

In single lots.....50%

In lots of 10 or more....50-5%

In lots of 25 or more....50-10%

Vapor pan, etc., each....50%

LIFTERS

Stove Cover

Copperedper gro. \$6.00

Alaskaper gro. 4.75

MALLETS

Tinners Hickoryper doz. \$2.25

MITRES

TAYLOR MADE

Made by Taylor means the BEST in terne plate making—judged by more than a century's experience. And, whether it be terne plate made ENTIRELY BY HAND—by an old Welsh hand dipping process and branded

TARGET AND ARROW ROOFING TIN

(Formerly known as Taylor's "Old Style")

or whether, for reasons of economy and to meet the keen competition in 40-lb. coated plates, it be made entirely by modern machinery and branded

TAYLOR'S EXTRA COATED

40 LBS. COPPER BEARING O. H.

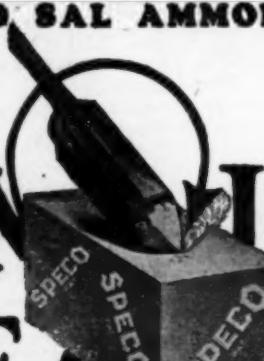
you can depend upon it that you are getting the BEST in its respective class. Ample stocks of both of these plates are carried by distributors located all over the U. S. A.

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PHILADELPHIA, PA.

Headquarters for Good Roofing Tin Since 1810

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HEAVY-26-GAUGE
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EAVES TROUGH

CONDUCTOR PIPE and HEADS

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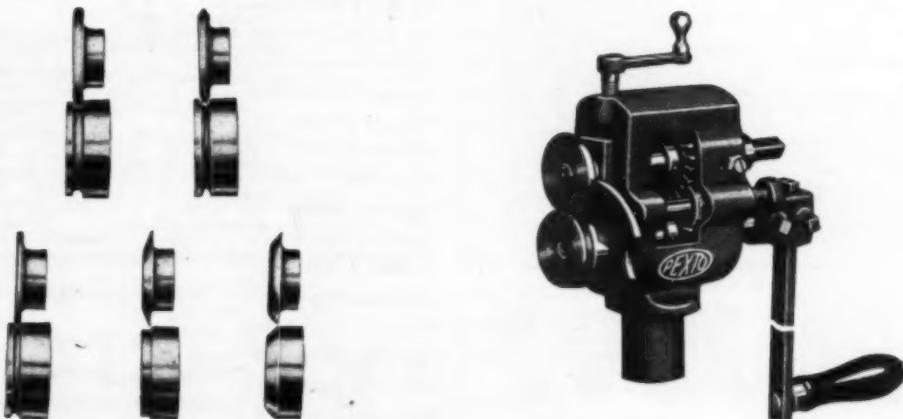
NETTING, POULTRY	ROOFING
Galvanized before weaving. 57½-5% Galvanized after weaving. 52½-6%	Per Square Best grade, slate surf. prepared \$ 2.30 Best talc surfaced 2.65 Medium talc surfaced 2.00 Light talc surfaced 1.80 Red Rosin Sheeting, per ton \$7.00
PASTE	SCREWS
Asbestos Dry Paste:	Sheet Metal 7. ¼ x ½, per gross \$0.62 No. 10, ¾ x ½, per gross 68 No. 14, ¾ x ¼, per gross 89
200-lb. barrel \$16.00 100-lb. barrel 8.75 35-lb. pall 3.50 10-lb. bag 1.10 5-lb. bag 60 2½-lb. cartons 35	PIPE
PIPE	
Conductor Cor. Rd., Plain Rd., or Sq.	
GALVANIZED	
Crated and nested (all gauges) 75-2½%	
Crated and not nested (all gauges) 70-15%	
Furnace Pipe	SHEARS, TINNERS' & MACHINISTS'
Double Wall Pipe and Fittings 60%	Viking \$22.00
Single Wall Pipe, Round Galvanized Pipe 60%	
Galvanized and Tin Fittings 60%	
Lead	LENOX THROATLESS
Per 100 lbs. \$12.50	No. 18 35%
Steve Pipe	No. 18 35% Shear blades 10% (f. o. b. Marshalltown, Iowa)
"Milcor" "Titelock" Uniform Blue Stove	SHIELDS, REGISTER
28 gauge, 5 inch U. C. nested 10.50	No. 1 "Gem" floor \$12.00 doz.
28 gauge, 6 inch U. C. nested 11.00	No. 2 "Gem" wall 6.00 doz.
28 gauge, 7 inch U. C. nested 12.00	
30 gauge, 5 inch U. C. nested 9.00	
30 gauge, 6 inch U. C. nested 10.00	
30 gauge, 7 inch U. C. nested 12.00	
T-Joint Made up	SHOES
6-inch, 28 ga. per doz. \$4.00	Galv. 28 Gauge, Plain or corrugated round flat crimp 60% 26 gauge round flat crimp 45% 24 gauge round flat crimp 1.
All Zinc	SNIPS, TINNERS'
No. 11, all styles 60%	Clover Leaf 40 & 10% National 40 & 10% Star 50% Milcor Net
POKERS, STOVE	SQUARES
W'rt Steel, str't or bent, per doz. \$0.75	Steel and Iron Net (Add for bluing, \$3 per doz. net)
Nickel Plated, coil handles, per doz. 1.10	MITRE
POKERS, FURNACE	Try Net
Each \$0.50	Try and Bevel Net
PULLEYS	Try and Mitre Net
Furnace Tackle per doz. \$0.60	Fox's per doz. \$6.00
..... per gro. 6.00	Winterbottom's 10%
Furnace Screw (enameled) per doz. 75	
Ventilating Register	STOPPERS, FLUE
Per gross 9.00	Common per doz. \$1.10
Small, per pair 3.00	Gem. No. 1 per doz. 1.10
Large, per pair 5.00	Gem. flat, No. 3 per doz. 1.00
PUTTY	
Commercial Putty, 100-lb. Kits \$3.40	
QUADRANTS	VENTILATORS
Malleable Iron Damper 10%	Standard 30 to 40%
REDUCERS—Oval Stove Pipe	
Per Doz.	
7—6, 28-gauge, 1 doz. in carion \$2.00	
REGISTERS AND BORDERS	WIRE
Baseboard, Floor and Wall.	Plain annealed wire, No. 1 per 100 lbs. \$2.05
Cast Iron 20%	Galvanized barb wire, per 100 lbs. 3.00
Steel and Semi-Steel 40-10%	Wire Cloth—black painted, 12-mesh, per 100 sq. ft. 1.65
Baseboard 40-10%	Cattle Wire—galvanized catch weight spool, per 100 lbs. 3.65
Wall 40-10%	Galvanized Hog Wire, 80 rod spool, per spool 3.18
Adjustable Ceiling Ventilators 40-10%	Galvanized Plain Wire, No. 9, per 100 lbs. 3.40
Register Faces—Cast and Steel	Stove Pipe, per stone 1.10
Japanned, Bronzed and Plated, 4x6 to 14x14 40-10%	
Large Register Faces—Cast, 14x14 to 38x42 60-10%	
Large Register Faces—Steel, 14x14 to 38x42 65-10%	
RIDGE ROLL	WRINGERS
Galv. Plain Ridge Roll, b'did 75-10-5%	No. 770, Guarantee each \$5.10
Galv. Plain Ridge Roll crated 75-10%	No. 770, Bicycle each 4.75
Globe Finials for Ridge Roll 50%	No. 676, Domestic each 4.25
	No. 110, Brighton each 3.75
	No. 750, Guarantee each 5.10
	No. 740, Bicycle each 4.75
	No. 22, Pioneer each 3.40
	No. 2, Superb each 3.65



LEARN ABOUT THIS "WONDER" MACHINE



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The Pexto New Universal Combination Rotary Bench Machine

Interchangeable Rolls That Make Possible Turning, Wiring,
Burring and Elbow Edging With the One Machine.

THE PECK, STOW AND WILCOX COMPANY, SOUTHBURG, CONN., U. S. A.

The NEW IMPROVED "STANDARD"

Rotable Ventilator



Patents pending

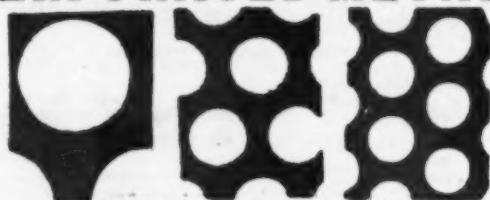
This favorite cone-shaped ventilator is now improved in several important points. The weight of the ventilator body is now carried on a concave thrust bearing nested in the apex of the conical body. This bearing turns upon the pivot point of the stationary center spindle.

The bronze Guide Bushings are now made of non-corrosive bronze which minimizes friction and any tendency to screech when body is rotating.

There are other new features. Write today for new catalog and price list.

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PERFORATED METALS



All Sizes and Shapes of Holes
In Steel, Zinc, Brass, Copper, Tinplate, etc.
For All Screening, Ventilating and Draining
EVERYTHING IN PERFORATING METAL

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Serving the
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IMPROVED REVOLVING

It runs in a self-lubricating bearing that is not affected by heat or cold. It is noiseless and produces an upward current of air. No down draft. It will satisfy and give you a good profit.

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229 to 237 ARCH STREET
WAREROOMS AND FACTORY: 100 TO 114 BREAD STREET
PHILADELPHIA, PA.
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BUYERS' DIRECTORY

Acetylene (Gas) Dissolved. Prest-O-Lite Co., Inc., New York, N. Y.	Elbows and Shoes—Conductor. Barnes Zinc Products Co., Chicago, Ill.	Meyer Furnace Co. The, Peoria, Ill. Moncrief Furnace Co., Atlanta, Ga. Monitor Furnace Co., Cincinnati, Ohio	Hooks—Conductor. Berger Co., L. D., Philadelphia, Pa.
Air Filters. Reed Air Filter Co., Louisville, Ky.	Dieckmann Co. Ferdinand, Cincinnati, Ohio	Mt. Vernon Furnace & Mfg. Co. Mt. Vernon, Ill.	Hotels. Fort Shelby Hotel, Detroit, Mich.
Bale Ties. American Steel & Wire Co., Chicago, Ill.	Lupton's Sons Co. David, Philadelphia, Pa.	Mueller Furnace Co. L. J., Milwaukee, Wis.	Humidifiers. Automatic Humidifier Co., Cedar Falls, Iowa
Blowers. Sturtevant Co., B. F., Boston, Mass.	Milwaukee Corrugating Co. Mil., Ch'go, La Crosse, Kan. City	Oakland Foundry Co. Belleville, Ill.	L. J. Mueller Furnace Co. , Milwaukee, Wis.
Bolts—Stove. The Kirk-Latty Co., Cleveland, Ohio	Engineering—Fan Blast Warm Air Heating. Herbert H. Davis Co., Inc., Chicago, Ill.	Peerless Foundry Co. Indianapolis, Ind.	Robinson Furnace Co. , Chicago, Ill.
Castings—Malleable. Fanner Mfg. Co., Cleveland, Ohio	Wood Faces—Cold Air. Auer Register Co., Cleveland, Ohio	Premier Warm Air Heater Co. Dowagiac, Mich.	Lath—Expanding Metal. Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City
Ceilings—Metal. Burton Co., The W. J., Detroit, Mich.	American Wood Register Co. , Plymouth, Ind.	Richardson & Boynton Co. , New York, N. Y.	Machines—Crimping. Bertsch & Co., Cambridge City, Ind.
Brakes—Cornice. Dreis & Krump Mfg. Co., Chicago, Ill.	Eaglesfield Ventilator Co. , Indianapolis, Ind.	Robinson Furnace Co. A. H., Massillon, Ohio	Machinery—Culvert. Bertsch & Co., Cambridge City, Ind.
Brass and Copper. American Brass Co., Waterbury, Conn.	Marsh Lumber Co. Dover, Ohio	Robinson Furnace Co. , Chicago, Ill.	Machines—Tinsmith's. Bertsch & Co., Cambridge City, Ind.
Copper & Brass Research Association. Merchant & Evans Co., Philadelphia, Pa.	McClure Builders Supply Co. , East Palestine, Ohio	Rybolt Heater Co. Ashland, Ohio	Burton Co., The W. J. , Detroit, Mich.
Cans—Garbage. Osborn Co., The J. M. & L. A., Cleveland, Ohio	Milwaukee Corrugating Co. , Mil., Ch'go, La Crosse, Kan. City	Schwab & Sons Co. R. J., Milwaukee, Wis.	Dreis & Krump Mfg. Co. , Chicago, Ill.
Castings—Malleable. Fanner Mfg. Co., Cleveland, Ohio	United States Register Co. , Battle Creek, Mich.	Simmplex Furnace Co. , Racine, Wis.	Marshalltown Mfg. Co. , Marshalltown, Iowa
Ceilings—Metal. Burton Co., The W. J., Detroit, Mich.	Fences. American Steel & Wire Co., Chicago, Ill.	Security Stove & Mfg. Co. , Kansas City, Mo.	Osborn Co., The J. M. & L. A. , Cleveland, Ohio
Friedley-Voshardt Co. , Chicago, Ill.	Fittings—Conductor. Barnes Zinc Products Co., Chicago, Ill.	Standard Furnace & Supply Co. , Omaha, Neb.	Peck, Stow & Wilcox Co. , Southington, Conn.
Wheeling Corrugating Co. , Wheeling, W. Va.	Milwaukee Corrugating Co. , Mil., Ch'go, La Crosse, Kan. City	St. Louis Heating Co. , St. Louis, Mo.	Ryerson & Son, Inc., Jos. T. , Chicago, Ill.
Chaplets. Fanner Mfg. Co., Cleveland, Ohio	Flue Thimbles. Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City	Success Heater Mfg. Co. , Des Moines, Iowa	Unishear Co., Inc. , New York, N. Y.
Chimney Tops. Standard Ventilator Co., Lewisburg, Pa.	Furnace Cement—Asbestos. Armstrong Co., The, Detroit, Mich.	Thomas & Armstrong Co. , London, Ohio	Whitney Mfg. Co., W. A. , Rockford, Ill.
Vail Mfg. Co. , Fort Wayne, Ind.	Buckeye Products Co. , The, Cincinnati, Ohio	Thatcher Co. , Chicago, Ill.	Whitney Metal Tool Co. , Rockford, Ill.
Check Drafts. Teela Sheet Metal Co., Oshkosh, Wis.	Connors Paint Mfg. Co. , Wm., Milwaukee, Wis.	XXth Century Heating & Ventilating Co. , Akron, Ohio	Mailing Lists. R. L. Polk & Co., Detroit, Mich.
Clinker Tongs. L. J. Mueller Furnace Co., Milwaukee, Wis.	Furnace Fans. A. H. Robinson Co., Massillon, Ohio	Utica Division of Richardson & Boynton Co. , Utica, N. Y.	Mandrels. Hydro Mfg. Co., New York, N. Y.
Coal Chutes. Majestic Co., The, Huntington, Ind.	Robinson Furnace Co. , Chicago, Ill.	Waterman-Waterbury Co. , Minneapolis, Minn.	Miters—Perforated. Harrington & King Perforating Co., Chicago, Ill.
Copper. American Brass Co., Waterbury, Conn.	Sturtevant Co. B. F., Boston, Mass.	Western Steel Products Co. , Duluth, Minn.	Miters. Friedley-Voshardt Co., Chicago, Ill.
Copper & Brass Research Association. Merchant & Evans Co., New York	Furnace Cement—Liquid. Technical Products Co., Pittsburgh, Pa.	Wise Furnace Co. , Akron, Ohio	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
Cornices. Friedley-Voshardt Co., Chicago, Ill.	Furnace Cleaners—Suction. Brillion Furnace Co., Brillion, Wis.	Garages—Metal. Thomas & Armstrong Co., The, London, Ohio	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
Milwaukee Corrugating Co. , Mil., Ch'go, La Crosse, Kan. City	Sturtevant Co. , B. F., Boston, Mass.	Gas (Acetylene) Dissolved. Prest-O-Lite Co., Inc., New York, N. Y.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
Dampers—Quadrants—Accessories. Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City	Furnace Fans. A. H. Robinson Co., Massillon, Ohio	Gas (Nitrogen). Linde Air Products Co., New York, N. Y.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
Parker-Kalon Corp. , New York, N. Y.	Robinson Furnace Co. , Chicago, Ill.	Gas (Oxygen). Linde Air Products Co., New York, N. Y.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
Diffuser—Air Duct. Acelus-Dickinson Co., Chicago, Ill.	Furnace Rings. Milwaukee Corrugating Co., Milwaukee, Wis.	Glass—Wire. Lupton's Sons Co., David, Philadelphia, Pa.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
L. J. Mueller Furnace Co. , Milwaukee, Wis.	Furnaces—Gas. Calkins & Pearce, Columbus, Ohio	Grilles. Auer Register Co., Cleveland, Ohio	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.	Furnaces—Warm Air. Agricola Furnace Co., Gadsden, Ala.	Harrington & King Perforating Co. , Chicago, Ill.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
Doors—Metal. Lupton's Sons Co., David, Philadelphia, Pa.	American Furnace Co. , St. Louis, Mo.	Hart & Cooley Co. , New Britain, Conn.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
Drive Screws—Harden Metal. Parker-Kalon Corp., 354 West 18th St., New York	American Foundry & Furnace Co. , Bloomington, Ill.	Independent Reg. Co. , Cleveland, Ohio	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
Lennox Furnace Co. , Chicago, Ill.	Banner Mahoning Furnace Co. , Youngstown, Ohio	Tuttle & Bailey Mfg. Co. , Chicago, Ill.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
Berger Bros. Co. , Philadelphia, Pa.	Brillion Furnace Co. , Brillion, Wis.	Guards—Machine and Belt. Harrington & King Perforating Co., Chicago, Ill.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
Burton Co. , The W. J., Detroit, Mich.	Calkins & Pearce Columbus, Ohio	Handles—Bolier. Berger Bros. Co., Philadelphia, Pa.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
Berger Co., L. D. , Philadelphia, Pa.	Colburn Heater Co. , Chicago, Ill.	Handles—Soldering Iron. Hyro Mfg. Co., New York, N. Y.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
Lupton's Sons Co. , David, Philadelphia, Pa.	Herb H. Davis Co., Inc. , Chicago, Ill.	Hangers—Eaves Trough. Berger Co., L. D., Philadelphia, Pa.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
May-Fiebeger Furnace Co. , Wheeling, W. Va.	Dowagiac Steel Furnace Co. , Dowagiac, Mich.	Lupton's Sons Co. , David, Philadelphia, Pa.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
May-Fiebeger Furnace Co. , Wheeling, W. Va.	Floral City Heater Co. , Monroe, Mich.	Heaters—Cabinet. Fox Furnace Co., Elyria, Ohio	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
May-Fiebeger Furnace Co. , Wheeling, W. Va.	Forest City—Walworth Run Fdy. Co. , Cleveland, Ohio	Majestic Co., The. , Huntington, Ind.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
May-Fiebeger Furnace Co. , Wheeling, W. Va.	Fox Furnace Co. , Elyria, Ohio	Mueller Furnace Co. L. J., Milwaukee, Wis.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
May-Fiebeger Furnace Co. , Wheeling, W. Va.	Green Foundry & Furnace Works. , Des Moines, Iowa	Waterman-Waterbury Co. , Minneapolis, Minn.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
May-Fiebeger Furnace Co. , Wheeling, W. Va.	Hall-Neal Furnace Co. , Indianapolis, Ind.	Heaters—Gas. Calkins & Pearce, Columbus, Ohio	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
May-Fiebeger Furnace Co. , Wheeling, W. Va.	Hart & Crouse Co. , Utica, N. Y.	Heaters—School Room. Fral City Heater Co., Monroe, Mich.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
May-Fiebeger Furnace Co. , Wheeling, W. Va.	Henry Furnace & Fdy. Co. , Cleveland, Ohio	International Heater Co. , Utica, N. Y.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
May-Fiebeger Furnace Co. , Wheeling, W. Va.	Hero Furnace Co. , Sycamore, Ill.	International Heater Co. , Utica, N. Y.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
May-Fiebeger Furnace Co. , Wheeling, W. Va.	Hess-Snyder Co. , Massillon, Ohio	International Heater Co. , Utica, N. Y.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
May-Fiebeger Furnace Co. , Wheeling, W. Va.	Homer Furnace Co. , Coldwater, Mich.	Meyer Furnace Co. , The, Peoria, Ill.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
May-Fiebeger Furnace Co. , Wheeling, W. Va.	International Heater Co. , Utica, N. Y.	Standard Furnace & Supply Co. , Omaha, Neb.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
May-Fiebeger Furnace Co. , Wheeling, W. Va.	Keith Furnace Co. , Des Moines, Iowa	Waterman-Waterbury Co. , Minneapolis, Minn.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
May-Fiebeger Furnace Co. , Wheeling, W. Va.	Lamneck Co. , W. E., Columbus, Ohio	Heaters—Gas. Calkins & Pearce, Columbus, Ohio	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
May-Fiebeger Furnace Co. , Wheeling, W. Va.	Langenberg Mfg. Co. , St. Louis, Mo.	Heaters—School Room. Fral City Heater Co., Monroe, Mich.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
May-Fiebeger Furnace Co. , Wheeling, W. Va.	Lennox Furnace Co. , Marshalltown, Ia.	International Heater Co. , Utica, N. Y.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
May-Fiebeger Furnace Co. , Wheeling, W. Va.	Marshalltown Heater Co. , Marshalltown, Iowa	Meyer Furnace Co. , The, Peoria, Ill.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
May-Fiebeger Furnace Co. , Wheeling, W. Va.	Majestic Co., The. , Huntington, Ind.	L. J. Mueller Furnace Co. , Milwaukee, Wis.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
May-Fiebeger Furnace Co. , Wheeling, W. Va.	May-Fiebeger Furnace Co. , Newark, Ohio	Standard Furnace & Supply Co. , Omaha, Neb.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.
May-Fiebeger Furnace Co. , Wheeling, W. Va.	Waterman-Waterbury Co. , Minneapolis, Minn.	Waterman-Waterbury Co. , Minneapolis, Minn.	Miters—Eaves Trough. Barnes Zinc Products Co., Chicago, Ill.

Mention AMERICAN ARTISAN in your reply—Thank you!

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Have you seen the improved models? The greatest line of Soldering Furnaces today on the market. They should be. There is more experience behind them. Forty-eight years of it! The Gems were popular before the majority of present day furnaces were heard of. It is the oldest, the recognized standard Soldering Furnace today.

Look these models over. Each one is in its class. Line them up and take your choice.

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Department A COLUMBUS, O.

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Capacity 10 gauge sheets

Any Length or Width

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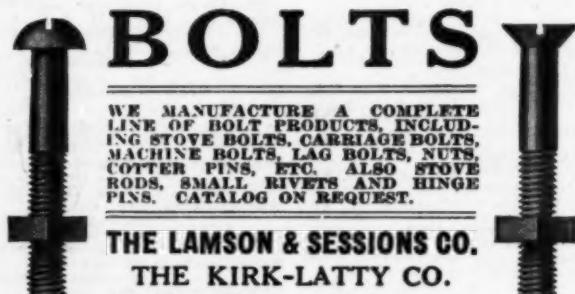
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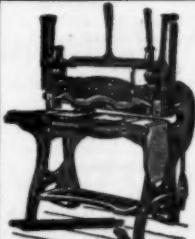
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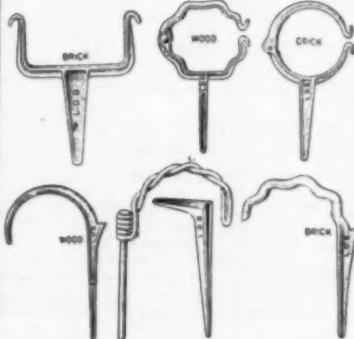
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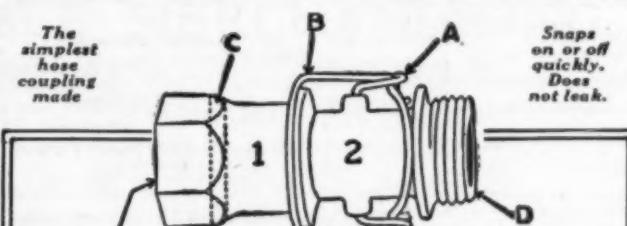
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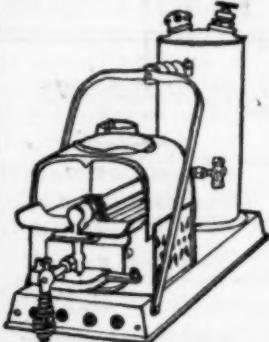
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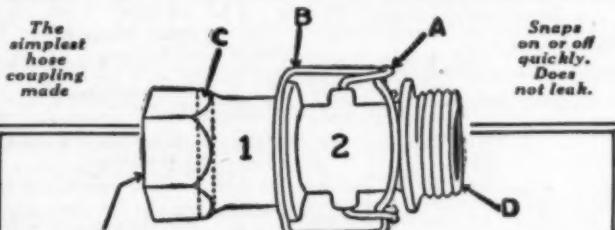
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For Sale or Lease—The best paying furnace business in Chicago, northwest side, with a large stock of castings, galvanized and tin plate and fittings, approximately 600 installations in a year. Seven years in present location. It requires \$5,000 to handle. Do not answer unless you have the cash or good security. Address Q-464, AMERICAN ARTISAN, 620 S. Michigan Ave., Chicago.

Wanted—A first-class sheet metal worker with small capital to lease my tin shop. Also have for sale a second-hand stove and furniture store. I am 73 years old and want to retire. Address R-464, AMERICAN ARTISAN, 620 S. Michigan Ave., Chicago.

For Sale—Half interest in well established combination sheet metal and plumbing shop. 16,000 population. A rapid growing city in the center of the largest oil field in the world. 70 miles southeast of Oklahoma City. Address J. B. Loveless, Box 207, Seminole, Okla. S-464

Wanted—To buy small tin shop or will work as tinner, plumber or furnace man. Am an all-around mechanic and wish steady work. Address F-464, AMERICAN ARTISAN, 620 S. Michigan Ave., Chicago, Ill.

For Sale—Sheet metal and furnace shop in county seat town of 3,500 population in Northeastern Iowa. Good set of tools and good business. Shop 25x40. Address R-463, AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

SITUATION WANTED

Married man with sixteen years of hardware experience desires a position in hardware store. I am employed at present, but wish to make a change. References can be furnished by present employer. Address P. O. Box 410, Perham, Minn. B-465

A-1 Plumber and Tinner, good at heating and furnace work wants steady position. Understands the Code and has license. Address S-463, AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago.

SITUATION WANTED

Situation Wanted—First-class sheet metal worker and furnace man; also pattern cutter. Engineering knowledge of warm air heating; familiar with Standard Code. 19 years' practical experience at general work. Desire connection with good clean outfit doing good class of work. At least ten months in year and preferably steady year round. Address P. O. Box 175, Elmer, Mo. L-464

Situation Wanted—By sheet metal worker and furnace installer. Have had 16 years' experience at general sheet metal and roofing work. Am steady and of good habits. Wish steady position with reliable firm. Can come at once. State wages. Address A. R. Burrows, Box 166, Coloma, Mich. K-464

Situation Wanted—By first-class tinner and furnace man. Can do inside and outside work. 25 years at trade. Nothing but steady job the year around. Am married. Can do anything that comes in any tin shop. Address W. J. Mack, Route 2, Box 90, St. Charles, Ill. G-464

Situation Wanted—By an all around practical tinner with 25 years' experience. Can take charge and run shop. Can read blue prints and estimate all kinds of work. A general shop preferred. Can come at once. Address P. S. McCullin, Inkster, Mich. H-464

Position Wanted—As working foreman by a first class sheet metal worker in all its branches such as may come to a first class shop. Can do pattern drafting, read blue prints and figure work. Have had sixteen years of experience and married. Address W-463, AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

SITUATION WANTED

Plumber, steamfitter and furnace man with 18 years' experience wishes to connect with a good reliable firm. Can handle any size job or can run a shop. If you are in need of just such a man get in touch with me. I am married and want a job that I can run as I would my own shop. Do not answer if you do not mean business. Can offer a good, steady and reliable job. Can come any time. State particulars. Address J-464, AMERICAN ARTISAN, 620 S. Michigan Ave., Chicago.

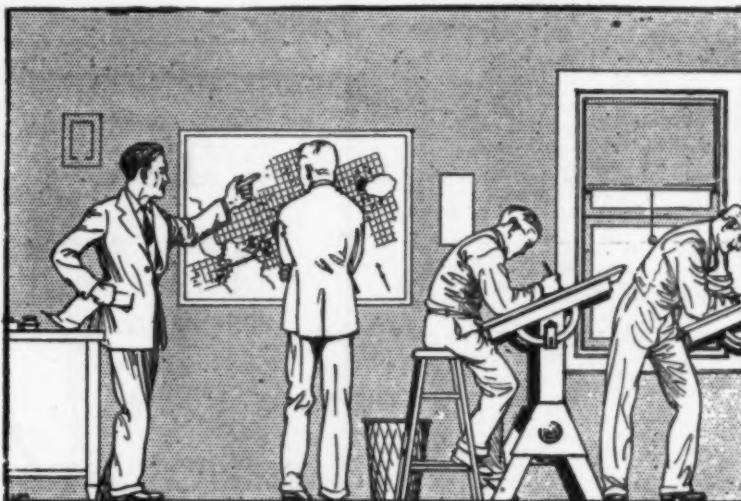
Experienced warm air heating engineer (A St. Louis Technical Institute trained man) desires position as engineer or estimator. Have had 10 years' practical experience and can lay out any job as well as do shop work on both furnace and sheet metal work. Available at once. Address Engineer, Box 325, Rochester, New York. T-463

Situation Wanted—By an all-around handy man—plumbing, steamfitting, tin work, house electric wiring, guttering. Finest work and can also help in a hardware store. 14 years' experience. Address A-465, AMERICAN ARTISAN, 620 So. Michigan avenue, Chicago, Illinois.

Wanted—Permanent position by all around sheet metal worker and plumber. Capable as foreman. Good layout and production man. Will also accept factory maintenance and efficiency position. Address K-463, AMERICAN ARTISAN, 620 So. Michigan avenue, Chicago, Illinois.

HELP WANTED

Wanted—Experienced furnace salesman. Good proposition. Address Louis Bahcall Furnace Co., Inc., 1010 St. Charles Road, Maywood, Ill. M-464



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HELP WANTED

Wanted—Sheet Metal Worker—Year around employment to the right party. Prefer a married man around 40 years of age with ability to make and erect quickly and neatly (without grumbling or growling) most any style cornice, skylight, marquee, ventilation or blow pipe work. Only a first class settled workman capable of handling inside and outside work of this nature need apply. Address P. O. Box 123, North Emporia, Virginia. Z-463

Wanted—An experienced Furnace Salesman. One capable of planning and estimating heating systems according to the Standard Code, able to handle replacement work, and figure sheet metal jobs on buildings and from plans. A St. Louis firm offers a steady job to the right man. Address Z-464, AMERICAN ARTISAN, 620 So. Michigan avenue, Chicago, Illinois.

Wanted—Experienced tin shop foreman for superintendent of large shop which manufactures tin pipe and fittings for the trade. Man under 40 preferred, and one who has had factory experience can serve us best. Address D-463, AMERICAN ARTISAN, 620 So. Michigan avenue, Chicago, Illinois.

Wanted—Have good opening for salesmen of ability to sell furnaces and supplies. We want men who can come determined to win. Proposition carries unusual merits. Choice territories open now. Address O-464, AMERICAN ARTISAN, 620 S. Michigan Ave., Chicago.

Wanted—Furnace Salesman. Some one who knows the selling game, both steel and cast. Address Y-463, AMERICAN ARTISAN, 620 South Michigan Avenue. Chicago, Illinois.

TINNERS' TOOLS

Wanted—An 8-foot brake in good condition. Also set of tanners' tools. State full particulars and lowest price. Address Y-464, AMERICAN ARTISAN, 620 So. Michigan avenue, Chicago, Illinois.

For Sale—Complete tanner's tools, including an 8-foot brake, 30-inch rollers, folders, turning machines and varieties of stakes. Address D-464, AMERICAN ARTISAN, 620 S. Michigan Ave., Chicago, Ill.

Wanted—An 8 ft. or 10 ft. Brake in first class condition. Reasonable price. State full particulars please. P. O. Box No. 818, Federal Building, Milwaukee, Wisconsin. X-463

Want to buy a deep throat Hand Lever Shear, also deep throat hand lever punch, capacity No. 10 gauge steel. Address Dean Specialty Works, San Antonio, Texas. X-464

For Sale—One 30-inch Peck, Stow & Wilcox Pipe Grooving Machine in first-class condition. Price \$25.00 C. O. D. Address T-464, AMERICAN ARTISAN, 620 So. Michigan avenue, Chicago, Illinois.

Wanted—One 8 or 10-foot brake. Address Griebenow-Welrich Co., Owen, Wis. P-464

MISCELLANEOUS

Truck for Sale—Model S International truck, run less than 10,000 miles. Will sell for \$300 cash. Address B. F. Jones, 112 Grant street, S. W., Massillon, Ohio. W-464

BOOKS

Exhaust and Blow Piping, by Hayes—Exhaust and Blow Piping has had an unusually big demand. A fresh supply is now off the press and is in our hands for immediate delivery. It has an invaluable treatise on the planning, cost, estimation and installation of fan piping in all its branches giving all necessary guidance in fan work blower and separator construction. 159 pages, 5x8, 51 figures. Cloth, \$2.00. Order from Book Dept., AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

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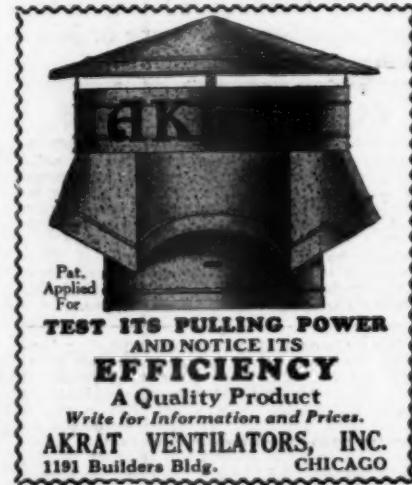
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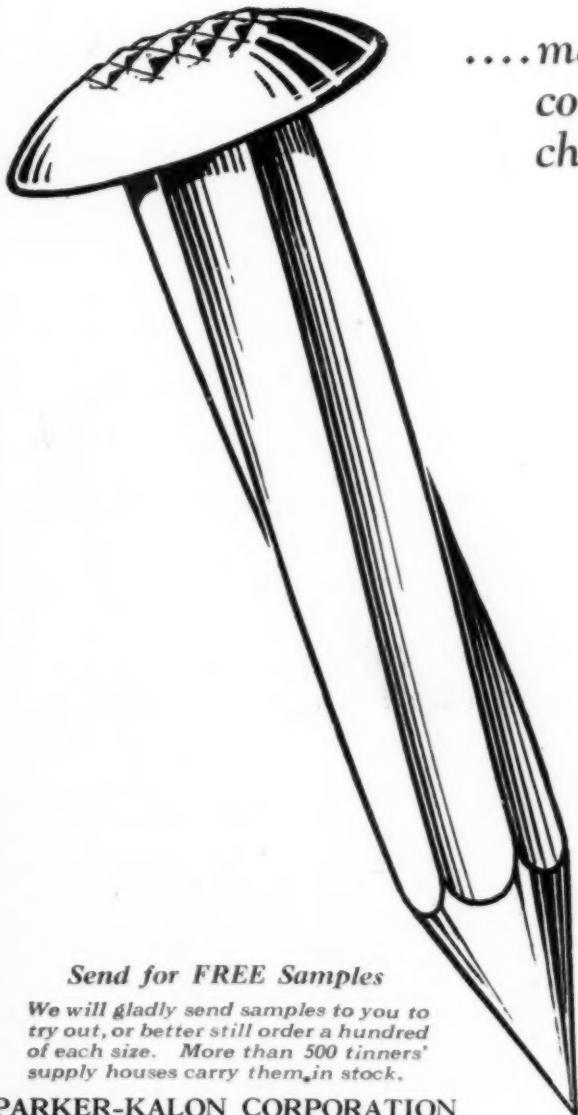
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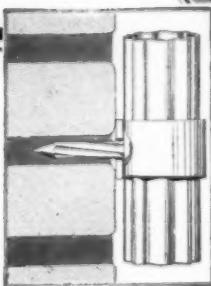
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